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Six Months in the Machine Shop Field

Early Promise of 1924 Fails to Materialize

By K. H. Condit
Editor, *American Machinist*

Business below average prevails after first two months—
Plants and purchasing are concentrated — Politics rules

THE year 1924 started off well for the machine industries and many manufacturers and dealers looked for a banner year. Unfortunately the early promise was not fulfilled and the average of business for the first half may hardly be called better than dull. There were exceptions, of course, and it is encouraging to note that they were usually the companies making high-production equipment. Underlying conditions are sound, however, and there is little overproduction. With easy money and at least a good chance that Europe will solve her economic problems, there is ground for hope that the next six months will be better ones.

A sign of the nature of the times has been the abandonment of some plants and the transfer of their personnel and equipment to others. In some instances purchasing has been centralized to effect economies.

Careful observers insist that the business cycle develops without regard to major political compaigns but it is certain that affairs at Washington during the early part of the year were not of a sort to stimulate confidence. The disclosures incident to the Teapot Dome investigation shook public faith in the integrity of men in high positions. Secretary Mellon's scientific tax reduction proposals were received with acclaim by the business world. What Congress did to them was consequently a keen disappointment although this was forgotten temporarily in the disgust aroused by the avidity with which the representatives of the people hopped aboard the bonus bandwagon. The exceedingly drastic immigration act met with disapproval on the part of some industrialists but was more philosophically received by those whose job it will be to supply the machine equipment with which we must multiply the productive capacity of our available manpower now that we can call less frequently on immigrant labor.

The attitude of the former attorney-general toward legitimate trade associations tended to diminish the regret of the country at his resignation. A more broad-minded point of view is expected from his successor. Reduction in the Canadian tariff rates on machinery came as welcome news to manufacturers in the United States. Tariff action of equal importance was that of the British labor government in removing the duties on automobiles.

Interesting Aeronautic Happenings

In the field of aeronautics, to which many machinery makers are looking for the next big boom in their industry, several important events occurred. On his third attempt Lieutenant Maughan succeeded in flying from New York to San Francisco between dawn and dark. His average speed was only a little less than 150 miles per hour. A series of tests were made to determine the feasibility of a New York-San Francisco daily mail service. The tests were successful and the service was inaugurated July 2. Four army planes designed to use either pontoons or wheeled landing gear started from the Pacific coast for a flight round the world. One ship was lost in a blizzard on the Alaskan coast, the pilot and mechanic escaping unhurt, but the other three won through the worst part of their journey and Asia is behind them. Our biggest dirigible, the Shenandoah, broke loose from her mooring mast in a gale but vindicated the faith of her constructors and crew by riding out the storm and fighting her way back to her hangar the next morning.

Some progress was made in engineering standardization. The screw thread report was aproved by the American Society of Mechanical Engineers and by the Society of Automotive Engineers. It will be issued shortly by the Screw Thread Commission. Secretary Hoover's Division of Simplified Practice assisted the manufacturers of forged products to reduce the variety

of their products and secured similar results with the bolt and nut men. Other projects showed encouraging advancement.

Industrial mobilization and plans for bringing it about got some consideration. Dinners of those interested were held at various centers and a drill was staged in the New York district with unexpectedly good results.

One new trade association in the machine-tool field made its appearance, the National Machine Tool Distributors' Association. The Society of Automotive Engineers transferred the location for its annual meeting from New York to Detroit.

Ambrose Swasey, one of the best known and most respected men in the machine-tool industry was honored by receipt of the John Fritz Medal.

Death took a heavy toll during the first half of 1924. Two figures of international prominence were called to their account, Woodrow Wilson and Nicolai Lenine. Of scarcely less note were William H. Maw of England, Alexander G. Eiffel of France and Hugo Stinnes of Germany. The list also includes Herbert E. Cushman of the Morse Twist Drill Co.; Arthur M. White, superintendent of the American Locomotive Co.; Homer B. Belfield, purchasing agent of Billings and Spencer; Lawrence B. Sperry; Alfred H. Smith, president of the N. Y. Central Lines; John M. Mack, former president of the International Motor Co.; John F. Alvord of the Torrington Co.; Norman E. Zusi of the Meisselbach-Catucci Manufacturing Co.; Eliphalet Remington; Robert Wuest, former commissioner of the National Metal Trades Association; Frank H. Caldwell of H. W. Caldwell and Sons Co., now controlled by the Link Belt Co.; Frank B. Gilbreth, consulting engineer; and H. M. Swetland, president of the United Publishers' Corp. and of the Class Journal Co.

The Railroad Shops Catch Up

By Robert S. Binkerd

Vice-Chairman, Committee on Public Relations
Eastern Presidents' Conference

Plenty of surplus freight cars—Stored locomotives in good order exceed 5,000—Consolidation is progressing

LATEST reports show that railroad locomotives and rolling stock at the end of the first half of 1924 are in better shape than they have been in a long time. In the neighborhood of 300,000 surplus freight cars are reported and there are something over 5,000 locomotives in good running order in storage ready for use. The records also show that in the period from Jan. 1 to June 1 58,555 new freight cars were delivered to the railroads, 61,256 being still on order. During the same period 911 new locomotives were delivered. There are 447 still on order.

During 1923 the railroads authorized the amazing capital investment total of $1,059,000,000. This figure probably will not be equalled this year but the authorization of $346,000,000 for the first quarter together with $420,000,000 carried over from 1923 will make it safe to say that for the first six months of 1924, more than $800,000,000 of capital expenditure has been authorized.

Railroad consolidation has been a live topic in business circles everywhere. The official hearings held recently served at least to call attention to some of the very serious problems that must be solved before mergers that will be fair to all concerned can be effected. In the meantime it is interesting to note that consolidations and absorptions of various sizes have been going on steadily in the regular course of affairs. In 1920, reports to the Interstate Commerce Commission were made by 202 Class I roads. At present the number has been reduced to 193. The reduction is really greater than it appears because since 1920 three Class II roads have grown so much that they are now reporting as Class I roads. The total mileage absorbed by the process during the three years is somewhere between 40,000 and 50,000.

Some legislation hostile to the railroads was introduced in the last Congress but nothing of moment was passed. The most serious of the attempts to sandbag the roads was the Howell-Barkley bill. Under its provisions the public would have been excluded from any part in the settlement of labor difficulties, a backward step that would have undone much of the good accomplished by the Transportation Act of 1920. Railroad men were agreed that its adoption meant the establishment of the closed shop on the railroads. Public interest in tax reduction and the bonus was so keen that little attention was paid to a legislative fight that otherwise would have attracted considerable notice. The bill never came up for final action.

One of the most interesting experiments conducted with a view to improving labor relations that has been undertaken in recent years is the co-operative plan now being tried on the Baltimore and Ohio. As it has only been in effect for three months it is too soon to tell whether or not it will succeed. The project is one of the few recorded efforts of a labor union to do a really constructive piece of work. Although the attempt did not come until after the shop unions had lost their strike it is to be hoped that it is only the first of many constructive efforts of organized labor.

Shop efficiency has improved considerably in recent months. The railroads used to be satisfied with a shop output of some 20,000 repairs per month from the 400,000 men in the shops. The latest figures indicate that output has more than doubled. For the first five months of 1924 the figures show that 263,632 locomotive repair jobs were turned out from all shops.

Part of the increase has been due to increased efficiency of the men. Some of the rest can be attributed to improved management and the balance to modern equipment. The amount appropriated for shops, engine houses and equipment as of April 1, 1924, the figure being for the year 1924, was $36,919,000. During the first quarter $11,228,000 was expended for this purpose.

Outlook Encouraging in the Automotive Industry

By John Younger
Associate Editor, *American Machinist*

Steady business for rest of year—Increase of bus transportation —Better feeling between railroads and motor-vehicle operators

USUALLY there is one problem at least troubling the industry, but at this time, June, 1924, there seem to be many problems on the horizon, all of them bringing with them attendant worries to vex the manufacturer.

The year started out with a promise of exceeding even the volume record of 1923. Sales for the first four months were unprecedentedly large, actually averaging at the rate of well over four million per year. May began to show a decline which accelerated during this month, and interviews with leading authorities seem to point to the balance of the year as being what may be termed "quiet," with occasional bright spots to relieve the general monotony.

It is unnecessary to dwell on the factors that are said to contribute to this. Some blame the situation on Congress, a few on the weather, and many on the fact that this is Presidential election year, with many possibilities looking up for settlement next November. Until then it is believed the country will be more or less uncertain and disturbed in its habits. The facts are, however, that with a few exceptions production will not be as buoyant and as optimistic as in the spring of the year.

Parts Business

A step fraught with meaning was taken by the Timken Detroit Axle Company when they announced the closing down of a portion of their plant and the relinquishing of certain low priced automobile business. In announcing this, stress was laid on the fact that future business would be taken only on a profitable basis when customers were willing to pay for quality. It is difficult to say at present whether this marks the culmination of a growing feeling among the parts makers against the low prices they were compelled to take from the manufacturers, or whether it is merely a step forward, which will lead to still farther results. At any rate, the fact is significant that more and more attention is being given to profitable production rather than to mere production.

Accessory Business

It is stated by good authority that Henry Ford is casting anxious eyes at the profits which some manufacturers are making selling extra equipment for Ford automobiles. So far the Ford Motor Company has left the matter of bumpers, shock absorbers, spot lights and a hundred and one different things to the retail jobber, but there is evidence now that this state of affairs will not continue much longer. Just how far Ford will go in taking over some of this retail profitable business is at present a moot question. At any rate, the accessory manufacturers and particularly the jobbers are all a-flutter over the news. Coupled with this is the fact that one or two manufacturers have also decided to have recommended accessories under the control of and sold by their organizations. In fact, it was rumored at one time that the General Motors Company was thinking seriously of taking over this business, but later on this was denied officially.

Production Matters

Although sales are quiet, this does not necessarily mean that production executives are also in a resting frame of mind. Many new models are scheduled, some involving major changes, such as the substitution of the 8-cylinder for the present six. Others are considering new types of transmission, and altogether there is a feeling that in order to capture the public there must be something new brought out. This means of course innumerable plans for layout work for production men, with the possibility of purchasing special machines.

The special machine versus the standard machine controversy is still raging, but there is a growing tendency toward the thought that after all it is not the type of machine that matters so much as the low cost at which it can do the work, or the all-round profit that it can produce. There seems in fact to be a wave of sentiment going through the industry, and particularly through the production end that volume production is not everything, and that profitable production and sales are the best.

Motorbus Industry

Development of great interest during the year has been the growth of passenger transportation by large vehicles of twenty passengers and more, so much so that this has virtually become a separate industry, although, of course, closely allied with the automotive industry. Still further growth is expected during the ensuing year with some interesting developments in the way of supplementing electric car transportation in some of our larger cities. One outstanding feature that leads to an optimistic viewpoint is that after a few years of opposition the American Electric Railway Association finally came forward expressing the belief that co-ordination of street car and motorbus transportation would meet the needs of the public best, and that they on their part were willing to co-operate with the bus people. This was reciprocated and the result has brought about a very good feeling in most instances. This together with the co-operation now existing between railroads and motor trucks for l.c.l. freight handling should lead to a greater development in the years to come in this branch of the industry. There is every reason to believe, although things are quiet just now, that there is large constructive work development still ahead.

Airplane Industry

This is distinctly subnormal at present. Commercial fleets have failed to materialize. Here and there one sees such, for instance, as the Aeromarine Company,

but beyond the great outstanding feature of the aërial postal service, one might say there is little commercial development in the country. There is nothing here like the organized passenger carrying services that one finds on the continent of Europe. Manufacturers are looking to the Government for orders, and the Government is not placing any at present. Authorities, such as General Patrick, state that the air service is not as well staffed as it should be and has nothing like sufficient equipment. During the year a noteworthy announcement was made by the Goodyear Tire & Rubber Company of Akron, Ohio, when they took over the exclusive rights for America for the manufacture of Zeppelin airships. These will be constructed with a view to commercial passenger carrying transportation.

Traffic Congestion

Let us now turn from the industries themselves to the operation features. During the year the vital importance of traffic control has been realized, and practically every city is now engaged in solving the traffic congestion problem. The general feeling is toward the provision of special highways which will bring about considerable relief, leading, of course, to the further use of automobiles. This is, however, a very serious problem and will take several years before it is finally solved, if it ever will be.

This year has also been significant for the growing appreciation of the value of proper maintenance departments. The flat rate system by which a customer knows what the cost of repairs will be before they are undertaken is rapidly becoming universal. Not only so, but this is bringing about a strong tendency to standardize repair costs all over the country. The Ford Motor Company and General Motors Corporation naturally are leaders in this work. Many others are also doing splendid service in laying out flat rate schedules. This has an important bearing on the training of mechanics in the country as factory intelligence is now being devoted to the problems of the repair shop mechanic. Formerly he was left entirely to his own more or less ignorant devices, but an actual scheme of education is developing which cannot but help benefit him.

Summary

Considering the whole broad field of production, engineering, sales and operation, there is no question but that the automotive industry has made big strides during this last year, and that it has sufficient momentum and sufficient work still before it that this coming year will see still further progress. The saturation point is still held to be a long way off, and each mile of new road still further postpones it. The outlook therefore is quite encouraging.

Electrical Industry Surmounts General Economic Conditions

By Robert W. Davis
Statistical Editor, *Electrical World*

Central stations lead manufacturing branch but latter is not far behind—Exports improve

A REVIEW of operations within the electrical industry during the first half of 1924 brings out with great clearness the relatively high economic position which has been attained by that industry. The production of basic commodities and factory employment in general has gradually decreased since the opening of the year, until at the end of the six-month period both were considerably below the level of a year ago. Operations in the electrical industry as a whole, while following the general trend, were more active and were by no means below those of a year ago. There are instances of course in which the revenue of certain companies for the first half of this year was below that for the same period of 1923, but these were confined almost exclusively to systems having a high percentage of industrial power load, especially textile and iron and steel.

Based on operations reported for the first five months of the year, it is estimated that a total of 26,200,000,000 kw.-hr. were generated by central stations during the first half of 1924, an increase of 8.9 per cent above the output for a similar period of 1923. This output figure is for the electric light and power industry only, and does not include energy generated by purely electric railway plants, reclamation service or private or isolated generating plants. Of this total output, 21.3 per cent was consumed for lighting, 14.6 per cent by electric railways and 64.1 per cent for industrial power purposes.

The gross revenue from sale of energy has shown even better gains. The gross revenue for the six-months period was $636,000,000 or 11 per cent above that of last year. Such financial operations are entirely in keeping with the now generally accepted slogan of the industry that "the revenue of the industry has never shown a decrease under any previous year."

New construction and extension of service in the central station industry is making new records during the present year. The best indication of this is in the amount of electric light and power securities sold during the first six months of the year. The sale of public utility securities totaled 457,507,200 during this period as against $397,051,000 during the first half of 1923, or a gain of 15.2 per cent. What proportion of this was for refunding purposes is questionable, but it was relatively small since a majority of the high interest rate securities sold during 1920 and the first part of 1921 were called last year.

Turning to the electrical manufacturing branch of the industry we find that while the downward trend has followed more closely that of general business than has the central station branch, yet even here operations were only a few per cent below normal. One thing which is helping the manufacturing branch is the large

increase in electrical exports. The total value of all electrical exports during 1923 was $72,158,241, a gain of 14.4 per cent—a large gain considering the increasing foreign competition. The first quarter of 1924, however, shows a gain of 28 per cent over the same period of 1923 and seems to point to even greater gains in annual exports than have been reported heretofore. Foreign manufacture and low labor costs do, of course, hold down the foreign sales of American-made goods, but superior quality and sales-methods appear to uphold American supremacy in a field that has been developed by American initiative.

Price Trend of Machine Shop Materials and Supplies Downward

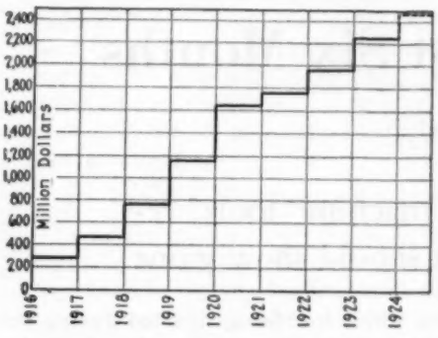
By Alden W. Welch
Manager Business News Department, McGraw-Hill Co., Inc.

Four billions spent in mill, shop and factory construction since 1916—As a whole 1924 will be a good year

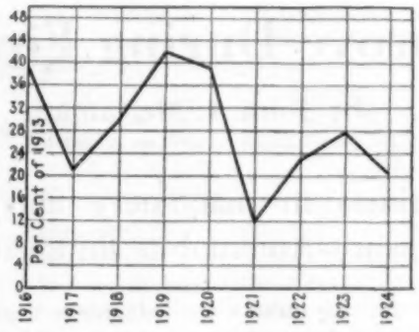
ALTHOUGH 1924 construction will hardly equal the enormous record of 1923, it will nevertheless exceed that of any year except the war years. In fact, contracts of $40,000 and over will probably exceed $200,000,000, with the total of all industrial contracts passing the $400,000,000 mark. These figures give an index of the scope of this year's machinery market.

The cost of materials from which industrial buildings are constructed is 4 per cent lower than one year ago and 22 per cent under the 1920 peak, and the general trend of metals prices also is downward. The present price of steel bars is 20c. per 100 lb. below a year ago and the trend is in exactly the opposite direction from that prevailing at this time last year. Fabricated brass and copper products are following the seasonal trend downward and are at least 4c. per lb. under a year ago. Machine bolts, leather belting, machine oil and lard cutting oil are all below the mid-year price levels of 1923.

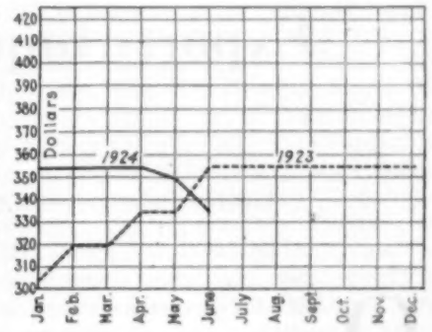
Prices of such materials as cotton waste and solder are higher than a year ago. The advance in the former



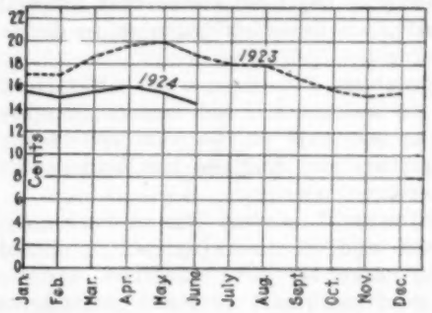
Cumulative value of industrial contracts awarded—Mills, factories, machine shops, etc. Minimum contract $40,000 (1924 estimated)



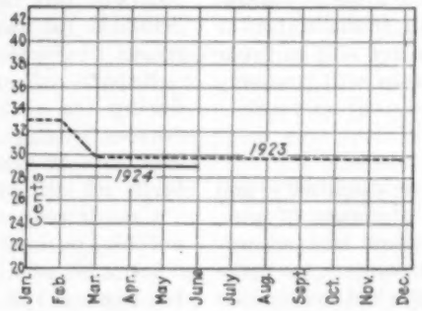
Volume of industrial construction —Mills, factories machine shops, etc. Minimum contract $40,000. Relation of cost and quantities of materials to 1913 base



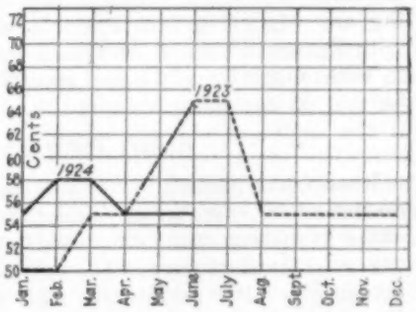
Variation in prices of mild steel bars at New York warehouses, per 100 lb. (base)



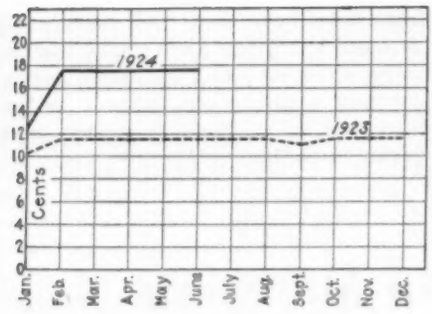
Variation in prices of brass rods —Base price at New York warehouses in cents per lb.



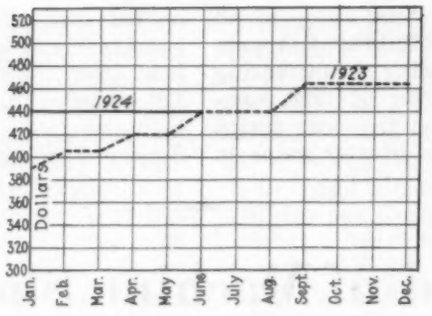
Variation in prices of machine and engine lubricant, medium bodied at New York warehouses, per gal. (wooden barrels)



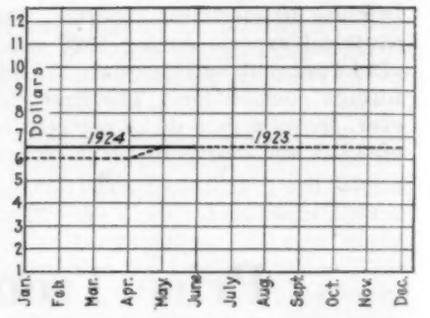
Variation in price of lard cutting oil—About 25 per cent lard, at New York warehouses, per gal.



Variation in price of cotton waste —white, at New York warehouses, per lb.



Variation in prices of cold-drawn shafting or screw stock—round, at New York warehouses, per 100 lb. (base)



Variation in price of washers—cast iron—½-in. at New York warehouses, per 100 lb.

was due to the slow-down in textile production and in the latter to the rise in the price of tin.

Cold-drawn steel products, such as shafting, screw stock, squares, hexagons, etc., also cast-iron washers and abrasives, are at exactly the same price levels as prevailed one year ago.

It is advantageous to show the trend over a long period and for that reason the accompanying charts are given. Four billion dollars worth of industrial construction has been let in the United States since Jan. 1, 1916. Contracts for plants worth $40,000 and up amounted to $2,240,000,000. The chart shows the cumulative money value of the larger projects. In this 8½-year period the actual physical expansion (not mere money value) of the industries was at least twenty-five times that of 1913. These values give some gage of the amount of machine-tools and machinery required to equip and maintain American industry.

Exports Improve During First Six Months

By John A. McNamara
News Editor, *American Machinist*

Better export business in machinery and machine tools reported by government—Automobile shipment should show gains

OFFICIAL government figures for the first six months of 1924 on the exports of metal-working machinery have not as yet been completed, the data available covering only the first five months of the year. Each of the five months shows a slight gain in machine-tool sales to other countries and indications point to a continuance of this increase through the month of June.

During the first half of the year sales have probably been heaviest to the United Kingdom, the Latin-American countries and to Japan and China. There has been some little increase noted in the sales to Germany, but manufacturers have little hope of obtaining any big permanent business with this country or with France, although American tools are still in favor in both countries and some special lines will probably be sold in increasing volume.

Russia Promising

Russia has proved to be a puzzle to machinery and machine-tool exporters. While the promises of purchase have been many the sales have been few, according to manufacturers who have attempted to make inroads into this territory. This does not mean that Russia is buying elsewhere nor that there is not a possible future in this business. It simply indicates that for the first six months of the year sales have not been up to the volume expected.

Japanese buying which has finally started during the latter part of June and the first part of July has also proved a disappointment. It was expected that this business would come in April and May and would be in heavier volume than indications are that it will be during the remainder of the year.

India and China Are Both Buying Labor-Saving Machines

It is interesting to note that India and China have displayed a willingness to buy labor-saving machinery. Labor is cheap in both of these countries and usually plentiful, but recently it has been stated that unusual demands for farm hands have left industry to devise means of overcoming the deficiency.

Exports of automobiles have been very satisfactory during the past six months and bid fair to increase further during the last half of the year. Germany may buy American cars and England has reduced the tariff on all American makes.

Canada reduced the tariff on some lines of machinery, notably agricultural and woodworking, which should mean a broadening market for these machines. Canada has been a very good machinery customer during the past six months.

General exporting has increased noticeably during the past year, much of this having taken place during the first six months of this year.

Standardization Work of 1924

By F. J. Schlink

Assistant Secretary, American Engineering Standards Committee

Screw thread standard adopted—Pan-American standards conference is called— Scope of A.E.S.C. broadened

SANE standardization seems slow in coming to those who are most interested in it. Much has happened during the first half of 1924, however, that should be encouraging. The American Engineering Standards Committee as the clearing house for technical standards in the United States sees all that is going on in this direction. At present 152 projects are in progress or have been completed. The sectional committees actively at work include more than 1,100 individuals. Some 235 engineering and technical societies are co-operating in the work, and 140 trade associations as well. In this connection it may be said that standardization work has been declared by the courts to be an entirely legitimate form of activity for trade associations.

Of the results achieved during the past six months perhaps the most important from the machine shop standpoint is the screw thread report. An American Screw Thread Standard has finally been approved and adopted and is available for those who are willing to use it. Another thread standard of wide value is that for fire hose couplings. This standard was recently approved and should go far to simplify a difficult situation. A safety code for laundry machinery has also been accepted.

A.E.S.C. Facilities Increased

As to the facilities of the A.E.S.C., they have been increased by the appointment of technical representatives in four of the leading industrial centers of the country. A technical translator has been added to the staff and the information service has thus been improved. Standards from abroad are received and translated. They are listed from time to time, the lists being given without charge to inquirers and the translations being supplied at cost. The information service is doing valuable work in answering questions from exporters as to the standards in use in other countries.

Two important conferences have taken place since January, one on galvanizing and sherardizing, the other on cast-iron pipe. As a result of the first conference, the American Society for Testing Materials has a sponsor committee at work on the general subject of zinc coating of iron and steel. The other conference led to the appointment of a joint committee from the A.S.T.M., the American Water Works Association and the American Gas Association.

At the meeting of the Foreign Trade Council in Boston resolutions were passed urging the calling of a Pan-American standards conference in November. Thus a first step in international standardization with our neighbors in Latin America has been taken.

The A.E.S.C. has co-operated with the Division of Simplified Practice of the Department of Commerce and has aided in advancing work on bolts and nuts and forged tools. The work of the Federal Specification Board and of Dr. McAllister on the Dictionary of Specifications has been described in the *American Machinist* since the first of the year. Both jobs are progressing rapidly, several sections of the Dictionary already having been issued.

In the machine tool field the National Machine Tool Builders' Association has formally requested the A.E.S.C. to take action looking to the standardization of electric motors for machine tools. It is likely that a conference will soon be called to consider standards that have been proposed.

Pins, Washers and Preferred Numbers

The American Society of Mechanical Engineers has been asked to sponsor standards for taper, split, straight and dowel pins, and plain and lock washers. It will undoubtedly accept. Work on a preferred number system has progressed slowly. Translations have been made of reports of foreign standardization bodies working on this project and are available at the office of the committee.

Finally, the A.E.S.C. has adopted a policy in regard to the reference in advertisements and catalogs to standardized products. The resolution follows: "In the opinion of the American Engineering Standards Committee the use, in the advertising of products which comply with specifications and other standards approved by the Committee, of proper references to such standards, is advantageous and makes for industrial economy; accordingly, the Committee desires to encourage the use of such references in trade catalogs and other advertising media, but the Committee will in no case pass upon the merit of products, or upon their compliance with specifications or other standards; which questions it will leave to the commercial and legal agencies equipped for such work."

Considerable work on standards has been done by foreign countries during the first half of the year. The importance attached to this phase of engineering endeavor by engineers of other nationalities is shown by the number of papers on the subject scheduled for the World Power Conference in London. In addition to the American paper, "International Standardization in the Field of Power," by A. E. Kennelly, Great Britain had one paper, Norway one, Sweden one, Holland one, Austria one and the Dutch Indies one.

Perhaps the most comprehensive of these papers is the one by C. le Maistre, C.B.E., Secretary, British Engineering Standards Association. Mr. le Maistre traces the development of standardization, pointing out the pitfalls and commenting on the advantages. He holds out for the use of the term unification rather than standardization, apparently having much the same idea as Herbert Hoover when the latter chose simplification as being less objectionable to the manufacturers on whose attitude the adoption of engineering standards depends. He closes by saying that "unification," through the opportunities afforded engineers of all countries to get together and discuss common technical problems, is now doing much to promote goodwill everywhere.

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Politics and the Professions

THE recent conventions of the two big political parties, and the several small ones, have aroused considerable public interest and perhaps a little thought. We say "recent" because the Democratic affair ought to be over by the time this is published.

One of the thoughts that should occur to many people has to do with the very small proportion of professional men, excepting lawyers, among the delegates. The reason for this condition is not hard to find. As was brought out in the addresses at the recent meeting of the Mechanical Engineers at Akron, the average young man who is planning to enter a profession is segregated from practical affairs, often until he is nearly thirty. Four years of college, four of professional school, and two of hospital work, if he happens to want to be a doctor, mean that he is probably at least twenty-eight before he mixes with men and starts to earn a living.

The case of the engineer is not so hard but he is subject to much the same seclusion from actualities during the time he is working for his degree. As a consequence of such detachment is it any wonder that he finds politics an entirely unfamiliar ground and prefers to let someone else take care of that phase of human endeavor?

We do not believe that the country would be "saved" if its destinies were placed in the hands of engineers or other professional men—we are not advocating an engineer's bloc. But we do believe that the engineer learns to think straight to a conclusion and that such thinking would be extremely valuable in politics, as it is in engineering.

For More Uniform Production

MANY methods have been discussed for lessening if not eliminating unemployment, that spectre which is seldom very far from the mind of the wage earner with family responsibilities. One of the proposed remedies, that of unemployment insurance, has been advocated by many but has had few trials, except in England, where it is a government measure. And there, in spite of conflicting reports, most people admit that it has not worked out very satisfactorily. Just how much of this is due to the conditions brought on by the war and how much to the method of administration seems to be a much disputed point.

Unemployment insurance has made little headway in this country although it has been established in a few places. The clothing industry in Chicago has a plan in operation and the recent agreement in New York between the Amalgamated Clothing Workers and the manufacturers includes a similar clause. The method adopted provides for a fund equal to 3 per cent of the payroll, one-half to be paid by each side, the method of distribution not being made public as yet.

The tendency of such a provision will be for the manufacturers to bend their energies toward a more uniform production, which should be beneficial to the industry and to the public. Having half the fund come from the workers will give them a keener interest in its equitable distribution and tend to prevent favoritism or voluntary unemployment. The working out of the method will be watched with interest by other industries as it may be the beginning of similar plans in a variety of lines.

Oil and Transmissions in Automobiles and Machine Tools

TWO of the subjects discussed at the convention of the S.A.E. at Spring Lake are of interest to machine builders as well as to motor manufacturers. Both are interested in oil contamination and in gear transmissions, even though the problems are not exactly the same. The machine builder does not have to contend with dilution of the lubricating oil due to gasoline and only to a small extent with water from condensation, owing to comparatively small temperature variations. Mechanical contamination from the wear of bearings and the entrance of dirt or other foreign matter and its elimination, affects both in similar ways.

Geared transmissions have become almost as much a part of the modern machine tool as of the automobile. It will perhaps be news to many that the modern type of selective, sliding gear transmission used so universally on automobiles, originated in a machine tool shop and was first applied to a radial drilling machine. But such is the case according to what seems to be the best authority. And any improvement in the way of variable speed transmissions which would be suitable for automobiles is of direct interest to the machine tool builder as well. The two industries are closely held together in a number of ways.

Power as a Measure of Progress

NO ONE who has watched the development of the machine tool can fail to be impressed with the strides which have been made during the past twenty to forty years. Time was when we in America prided ourselves on the lightness of our lathes and planers and the back files of the *American Machinist* bear testimony to our belief that the machine tools built in other countries were unnecessarily heavy and consequently hard to handle. But the years have changed our attitude and we now boast of the weight and rigidity of our machines.

Nothing illustrates better the change that has taken place than the amount of power consumed in a modern shop. In the days of light machine tools it was not uncommon to find a 25-hp. steam engine supplying power for a shop, employing perhaps 100 men. The writer recalls such a shop with line shafting on four floors, absorbing quite a percentage of the power developed.

There are today few shops of the size in which there is not at least one machine with a 25-hp. motor driving it. And motors of 50, 75 and even 100 hp. are no longer so uncommon as to cause comment. With the increase in power applied comes the removal of more and more metal per minute, until we can truly say that power is a measure of progress in the machine tool field.

American Machinist Shop Equipment Review

Semi-annual résumé of machines, tools and accessories described in the Shop Equipment News section of the American Machinist during the first six months of 1924

Principal Developments in Shop Equipment

By L. C. Morrow
Managing Editor, *American Machinist*

DEVELOPMENT in shop equipment during the first six months of 1924 has been consistent with the policy of reducing production costs by machinery, a policy that must be followed by American manufacturers to offset lower standards of living and lower wages abroad.

The greatest single influence has again been the automotive industry. It has been directly responsible for: A multiple-spindle (4, 6 or 8) inclined boring and reaming machine, fitted with two roller-conveyor sections; an 8-spindle machine for hobbing splines on automobile shafts; a continuously operating automatic boring and facing machine; a planetary-type radius milling machine for milling the ends of crankcases; a machine for drilling three brake drums at once; two machines for drilling the king-bolt holes in front axles; a 6-spindle continuous turning and facing machine.

Necessity for automatic operation in keeping costs low has resulted in the development of four automatic screw machines, and automatic machines for drilling, hobbing, boring and facing, cutting-off pipe, threading pipe, surface grinding, hob sharpening, tapping, broaching, turning. Featured among these machines are a hopper-type magazine; an air-operated control system on a chucking machine; and a chuck that depends for its gripping power upon centrifugal force. Names indicative of automatic features are popular, as evidenced by the introduction or continuation of such names as rotormatic, contin-u-matic, new-matic, duomatic and roto-matic.

Grinders Greatest in Numbers

In number of new machines introduced, the grinders lead again, with 25. They include these types: Coil spring, face, internal, abrasive band, floor, surface, disk, universal, tool and cutter, hob, swing-frame, floor, and bench. Automatic operation is being adopted. Individual motors for wheel, work and table have been adopted on one cutter and tool grinder. Two motors, one for the work spindle and one for wheel, pump and table, have been adopted by another. An internal grinder is equipped with individual motors for work head, wheel head and pump. Still another internal machine has three motors, one for the work head, one for the wheel head and one for the rear shaft and to furnish power for the table traverse. This feature of individual drives does away with overhead works and makes the grinders self-contained. Hydraulic traverse of table is a feature of two grinders.

In the drilling field 13 machines were introduced. Many of them are especially for automobile work or were pointed that way, and some are automatic. Multiple spindles are much in evidence. Ball bearings are so widely used in one radial drill that the maker has termed it a ball-bearing radial. Another maker is emphasizing the self-oiling feature of his machinery.

Attention has again been given to the railroad field, with the development of a car wheel boring machine, a journal-truing and axle lathe, a 58-in. locomotive-rod miller, a staybolt machine, a driving-box boring and facing machine, a combination shear, punch and bar cutter, and a bolt-turning machine.

Lathes and Milling Machines

Geared heads predominate in the 10 lathes introduced, one of which is an automatic. Of these lathes two are of the cone-head type, one being a portable tool and the other having friction clutches to drive the spindle. Rapid traverse for the carriage was added by one manufacturer to a 17-in. lathe. The same maker introduced a gap lathe.

A matter of interest in the milling field was the introduction by one concern of a table attachment to convert one of its hand-operated machines to a semi-automatic. Milling machines placed on the market included a 5-in. hand-operated machine for production work, a 28x10x18-in. geared-head universal machine, a planetary-type radius miller, a machine for milling pipe-tap threads, and a double-spindle production miller. In the machine last named the work is held in a turret and the spindle heads slide. Roughing and finishing can be done without removing the work from the turret.

In addition to the multiple-spindle hobber previously referred to, there were two other machines of note placed on the market, a hobber for machining standard gears in quantity and an "automatic" hobber for gears up to 72 in. in diameter.

Among other machines introduced and improved were a number of shapers, one for toolroom use furnished with a universal table; several electric trucks; a portable service elevator; an electric power stacker; tapping machines; welding machines and tools; trimming, punching and shearing presses; boring and facing machines; and a planer-type slotter.

Noticeable in machine design as a whole so far in 1924 have been: Greater convenience in operating, with a marked tendency toward arranging some machines to be controlled from either side; increased use of central or automatic oiling; more attention to providing for lubrication; making machines self-contained; greater use of motor drive and push-button control; and increased use of rapid power traverse.

Contents of the Review Pages

	No.	Page
Boring Machines	1–7	91
Vertical	1–4	91
Cylinder	5–6	91
Attachment	7	92
Drilling Machines	8–25	92
Upright	8–11	92
Radial	12	93
Multiple-Spindle	13–19	93
Horizontal	20	94
Portable	21–24	94
Attachment	25	95
Grinding Machines	26–58	95
Disk	26–29	95
Face	30	96
External	31–33	96
Internal	34	96
Surface	35–38	96
Heavy-Duty	39–41	97
Tool and Cutter	42–49	97
Swing Frame	50–51	99
Portable	52–56	99
Attachments	57–58	100
Lathes	59–83	100
Engine	59–67	100
Automatic	68	102
Screw Machines	69–72	102
Gap	73	102
Chucking Machines	74–76	103
Special	77–78	103
Attachments	79–83	103
Milling Machines	84–91	104
Universal	84	104
Production	85–87	104
Hand	88	105
Attachments	89–91	105
Planers, Shapers and Slotters	92–97	106
Planer	92	106
Shapers	93–96	106
Slotter	97	106
Presses	98–105	107
Hydraulic	98–100	107
Trimming and Forging	101–102	107
Straightening	103	107
Attachments	104–105	108
Threading Machines	106–114	108
Tapping	106–109	108
Thread Milling	110	109
Pipe Threading	111–114	109
Other Machine Tools	115–124	110
Broaching	115	110
Chamfering	116	110
Facing	117	110
Hobbing	118–120	110
Valve Reaming	121	111
Sawing	122–123	111
Turning	124	111

	No.	Page
Other Machines	125–153	111
Beading	125	111
Bending	126–128	112
Cleaning	129	112
Chip Machinery	130–133	112
Forging	134	113
Hammer	135	113
Marking	136–138	113
Pipe Cutting	139–140	114
Polishing	141	114
Punching and Shearing	142–145	114
Riveting	146–148	115
Scraping	149	115
Screwdriving	150	115
Welding	151–153	115
Measuring, Gaging and Testing Equipment	154–163	116
Dial Gages	154–158	116
Machine Level	159	117
Metallographic Equipment	160–161	117
Gaging Tape	162	117
Aligning Jig	163	117
Material Handling Equipment	164–174	117
Trucks and Tractors	164–168	117
Hoists and Elevators	169–172	118
Trolley	173	119
Truck Wheels	174	119
Woodworking Machinery	175–177	119
Sawing	175–177	119
Small Tools	178–205	120
Hand Tools	178–183	120
Cutting Tools	184–188	120
Taps and Dies	189–196	121
Tool Holders	197–201	122
Miscellaneous	202–205	123
Miscellaneous Equipment and Supplies	206–240	123
Adding Machine	206	123
Air Compressors	207–209	123
Belt Lacing Equipment	210	124
Brake Lining Equipment	211	124
Electrical Equipment	212–214	124
Heat Treating Equipment	215–216	125
Lamp Locks	217–218	125
Materials	219–222	125
Power Transmission Equipment	223–231	125
Standard Bushings and Die-Sets	232–233	126
Stools	234	127
Ventilating Equipment	235–237	127
Welding Equipment	238–240	128

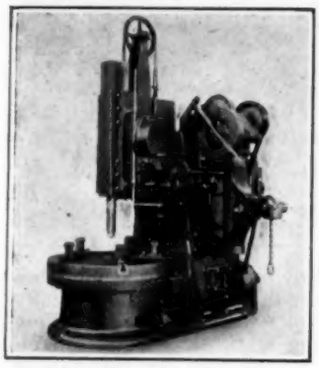
Boring Machines

—1—

Boring Machine, Car Wheel

Betts Machine Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. [Vol.60,p.33.]

The labor-saving features of this machine include an automatic chuck and independent rapid power traverse to both boring and facing bars. The boring bar is rectangular in



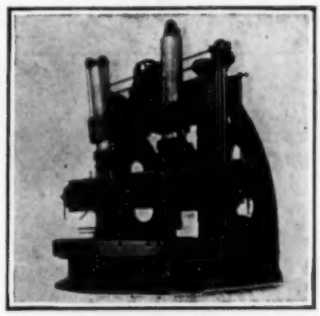
section and slides in long guides machined in the frame. The facing bar is located at the back of the chuck and the slide is provided with sufficient vertical adjustment to accommodate various heights of wheel hubs. Each head is provided with six feeds which may be obtained while the machine is running. The boring bar is counterweighted so that it may be raised and lowered by hand, if desired. The automatic chuck is controlled through a reversing friction clutch, so that it is unnecessary to stop or reverse the motor when closing or opening the chuck. When the driving clutch is engaged, the table starts to rotate and the jaws move toward the center, gripping the wheel with the full driving force of the motor. The machine has capacity for wheels from 10 to 42 in. in diameter.

—2—

Boring Mill, Vertical, Double-Driven, 100-In.

Betts Machine Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. [Vol.60,p.379.]

An important feature of the construction of this machine is the table drive mechanism which consists of two spur pinions meshing with an internal gear of wide face and coarse pitch, mounted beneath the table. The pinions are keyed to their shafts so that each meshes evenly with the table gear, and are located on opposite sides of the gear to produce a smooth-running drive. The saddles



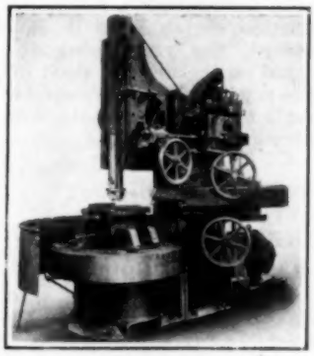
and tool spindles have eight feeds, obtained through sliding steel gears. Power rapid traverse is driven by a motor on top of the machine. The tool spindles are counterbalanced by ring-type counterweights. The cross rail has a wide face and is carried back between the uprights to provide stiffness when the heads are near the center. The driving motor is direct-connected through gearing to a speed box which makes available a total of twelve table speeds in geometrical progression.

—3—

Boring and Facing Machine, Driving Box

William Sellers & Co., Philadelphia, Pa. [Vol. 60, p.821.]

The box to be machined on this special-purpose machine is mounted in the chuck on the rotating table and bored and faced at the same time.



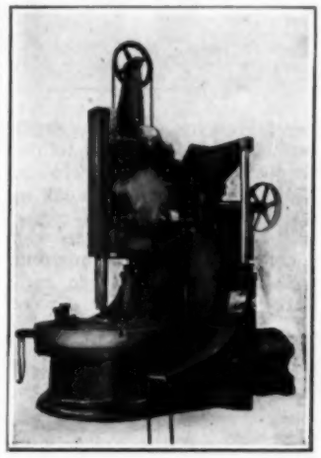
The box may be shifted to a new center while still clamped in the chuck, if desired, for the purpose of relieving the edges. The boring bar is carried by a long rectangular steel slide, the facing head being mounted in a horizontal slide that is also rectangular in section. Power feeds are provided for both bars. Two sets of jaws center the box sideways in the chuck and all four jaws are operated by a single crank. Two sets of cutters are provided, a double-end cutter for roughing and a single-end cutter for finishing. Both sets of cutters have micrometer adjustment. The machine is preferably driven by a d.c. motor but a speed change box can be provided for driving with an a.c. motor, if direct current is not available.

—4—

Boring Machine, Car Wheel, Improved

Betts Machine Works of the Consolidated Machine Tool Corp of America, Wilmington, Del. [Vol.60,p.822.]

In addition to the mechanism of the former model of this machine, previously noted in paragraph No. 1 above, this later design incorporates features intended



to make it of particular value as a high-production tool. Two pneumatic hoists have been added to decrease the time necessary for loading the machine. These hoists are independent and are located on each side of the machine. A 20-hp. variable-speed motor is used for driving, the different table speeds being obtained by variation of the motor speed. The motor is operated by means of a reversible automatic controller and a push-button station. Starting and stopping the table and the opening of the chuck jaws are also controlled by push buttons. A separately-mounted field rheostat is used to vary the motor speed. If direct current is not available the constant-speed a.c. motor driving mechanism supplied with the former model is furnished.

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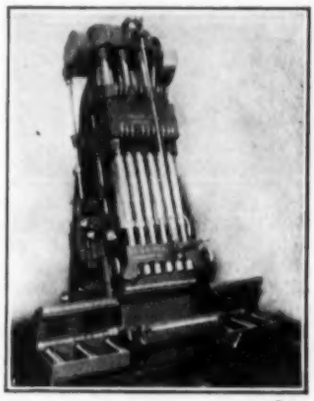
Boring and Reaming Machine, Cylinder

Ingersoll Milling Machine Co., Rockford, Ill. [Vol.60, p.189.]

This machine is a production machine designed especially for boring and reaming automotive cylinders. It



is of the inclined type and is made with four, six or eight spindles as desired. Two conveyor sections are attached to the machine at either side at the bottom and are mounted on a single shaft, so that they can be aligned with the shop conveyor line or with the table of the machine. Power is delivered from the pulley shaft at the top of the machine to a worm drive shaft and thence through worms and wormwheels to the saddle drive shafts, each of which drives two spindles. Each spindle drives a line boring bar piloted in both the upper and lower bushings of a permanent fixture for holding the work. The feeds and the rapid traverse are both controlled through a lever on the left side of the machine. The saddle is counterweighted. Pick-off gears make it possible to change the speed as desired and the feed is determined by the requirements of the job. The upper ends of the spindles run in SKF ball thrust bearings that can be adjusted from the outside. The machine weighs 15,000 pounds.

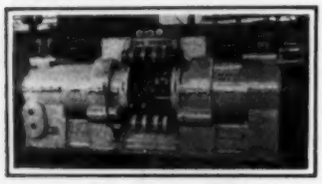
—6—

Boring and Facing Machine, "Rotormatic"

Davis & Thompson Co., 253 Reed St., Milwaukee, Wis. [Vol.60,p.415.]

This continuously operating automatic boring and facing machine is intended for operations on cylindrical parts, particularly Knight

engine sleeves. The machine has two horizontal opposed turrets each of which carries six spindles, in which the cutting tools are mounted. The machine will operate on the opposite ends of six pieces of work at the same time or perform a single operation on twelve pieces. The clamps for the work are opened and closed automatically at the



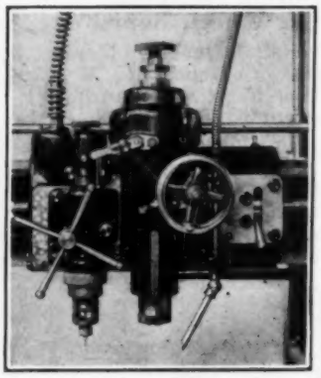
loading position. They are held closed by means of chains under spring tension. The turret rotates continuously. Threading operations on work up to 4 in. in diameter can be done. The speed of the cutting spindles is varied by means of change gears and two sets of gears are supplied with the machine. Special attention has been paid to proper lubrication arrangements and the machine is of massive construction to withstand the wear and tear of rapid production work. Work up to 8 in. in diameter can be faced and holes 7 in. in diameter can be bored. The facing head has a range of movement of 2½ in. crosswise, while the boring tool can travel 14 inches longitudinally through the work.

—7—

Drilling Attachment for Small Holes, Societé Genevoise

R. Y. Ferner Co., 140 *H. St., N. W., Washington, D. C.* [Vol.60,p.225.]

This attachment is for use on the larger sizes of the Societé Genevoise jig-boring machines, described on p. 385, Vol. 59. The special drilling spindle is mounted on the same slide with the main boring spindle and at a fixed distance from it. The two spindles are exactly parallel, the small spindle be-



ing driven by a flexible shaft connected to the machine through a friction clutch. The small drills are held in special conical chucks provided with a guide in the form of a hardened bushing with a conical point to support the drill end.

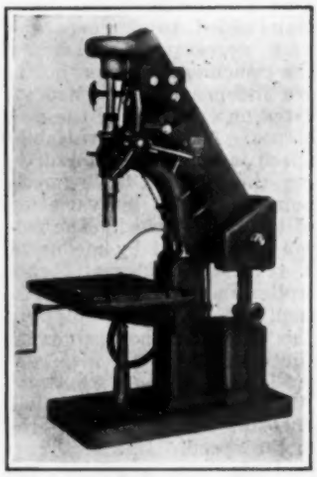
Drilling Machines

—8—

Drilling and Tapping Machine, All-Geared, Self-Oiling

Barnes Drill Co., 820 *Chestnut St., Rockford, Ill.* [Vol.60,p.416.]

This machine consists of the standard 24-in. self-oiling machine made by this company equipped with a rigid column and a square table for jig work. The table is gibbed to ways on the machine column, and is supported by a screw for adjustment of height. Work can also be machined on the base of the machine. The system for oiling the gears is automatic and also accommodates the shaft bearings. Oil is pumped by a geared pump and distributed constantly to the gears and bearings except the spindle sleeve and cross spindle. A special geared thread leading feed will be furnished for the tapping machine, with slip gears



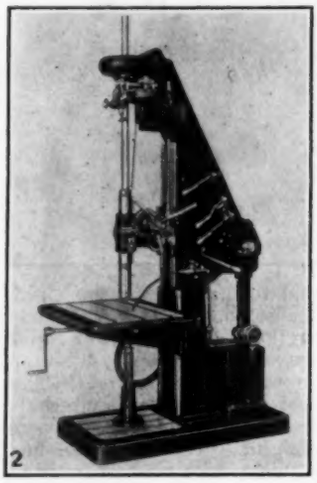
to conform to the lead of the tap or die that is to be used on the machine.

—9—

Drilling and Tapping Machine, No. 263

Barnes Drill Co., 820 *Chestnut St., Rockford, Ill.* [Vol.60,p.486.]

In this machine are incorporated a number of improvements, including the self-oiling feature, over the



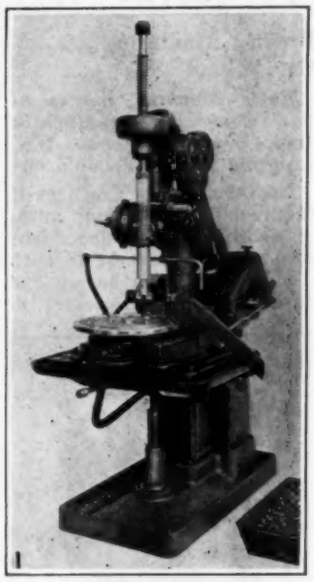
standard 26-in. all-geared drilling machine, which it is intended to replace for high production work. A square column and a rectangular table are supplied for the sake of rigidity and an improved type of spur-geared feed is used in place of the usual worm and gear. Eight changes of geared feeds and speeds are available and can be instantly selected without stopping the machine. The feed rack is dovetailed into the sleeve and keyed in place so that it will take the heavy thrusts of production work without danger of coming loose. The head is gibbed to the frame and is counterbalanced. When the machine is used for tapping a reversing friction clutch gear is employed, the gear being located on the driving shaft of the machine. The trip can be set so that the spindle will automatically reverse.

—10—

Drilling and Tapping Machines, Automatic

Barnes Drill Co., 820 *Chestnut St., Rockford, Ill.* [Vol.60,p.672.]

These machines are built in three sizes from 20- to 24-in. and all sizes are furnished in the combined drilling and tapping type of construction, or in plain drilling or tapping styles. The usual construction features of the other models made by this company are incorporated in these machines and a self-indexing or a hand-indexing work table is furnished. The



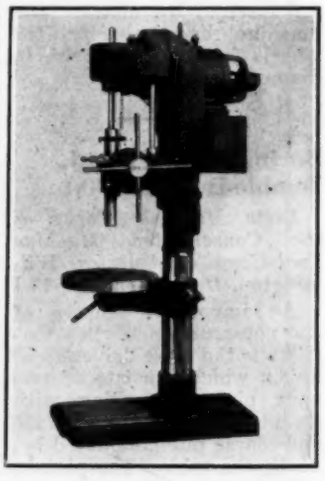
driving and reversing clutches for tapping are automatically controlled and the self-indexing work table starts to index as soon as the tap is clear of the work. An automatic ejector for the finished work can be furnished, and the work holders are designed to fit the particular work in hand. Both the drilling and the tapping arrangement can be combined in a single gang machine if desired, and auxiliary multiple-spindle heads can be used to obtain a high rate of production.

—11—

Drilling Machine, Direct-Drive, 21-In.

Cincinnati-Bickford Tool Co., Cincinnati, Ohio. [Vol. 60,p.943.]

This machine is self-contained with its driving motor



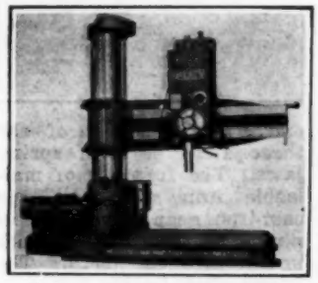
and is provided with only one speed and one feed, but both speed and feed can be selected. The possible speeds range from 48 to 707 r.p.m., while the feed limits are 0.006 and 0.030 in. per revolution. A vertical adjustment of the motor makes it possible to change driving gears if a different speed is desired. The head can be adjusted to three positions vertically and with a range of 5 in. These machines can be arranged as gang drills and they can be provided, if desired, with a pilot handwheel, a tapping attachment, belt drive, oil pump and grooved table.

— 12 —

Drilling Machine, Radial, Ball-Bearing, 6-Ft.

Dreses Machine Tool Co., Cincinnati, Ohio. [Vol. 60, p.521.]

The notable features of this machine include the wide use of ball bearings, convenience of all operating controls, automatic lubrication for the head gearing, and an



exceptionally simple and convenient control for the arm elevating mechanism. The head is entirely enclosed and slides on three bearings on the arm. The spindle runs in renewable bronze bearings and the thrust is taken by ball bearings. Two levers are used to obtain the four changes that are available in the head. These changes, combined with the eight changes in the speed box, provide a total of 32 spindle speeds. Fifteen feeds for the spindle are available and are obtained by two levers on the front of the head. The column is composed of two parts, the inner member being bolted to the base and reaching to the top of the outer sleeve. One lever controls the clamping, lowering and elevating of the arm, this control eliminating the danger of the accidental engagement of the elevating mechanism when the arm is clamped in its operating position on the column.

— 13 —

Drilling Machine, High-Speed, Two-Spindle

Sigourney Tool Co., Hartford, Conn. [Vol. 60,p.156.]

This is a bench machine, the spindles having a No. 1 Morse taper to accommodate taper shank drills up to ½ in. in diameter. Standard drill chucks are supplied for the small drills. The horizontal shafts are mounted in S.K.F. double row bearings and the spindles in Norma bearings. The bearings of the spindle pulleys are independent of the support of the spindles,

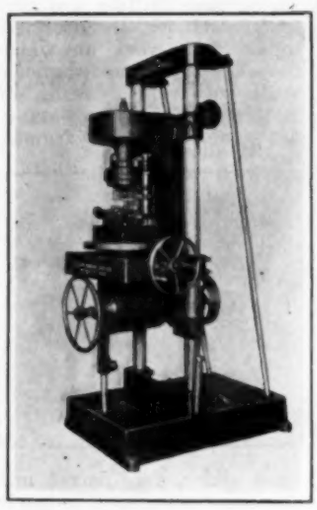
so the latter are not affected by the belt tension. The upper countershaft of each head is independently adjustable to maintain the tension of the belts. A removable stationary tube encloses the upper end of each spindle. The machine requires a bench space 19 in. square. The distance between the spindles is 6 in. and the available surface of the work table is 7½x14½ in. The rotative speeds of the spindles range from 950 to 3,000 r.p.m., and the vertical adjustment of the heads is 6 in. The approximate weight of the machine is 100 pounds.

— 14 —

Driller, Continuous

Sellew Machine Tool Co., Pawtucket, R. I. [Vol.60, p.305.]

This machine is applicable to the drilling of any number of holes up to a hundred or more and laid out in any desired pattern. The number of holes drilled at once depends, of course, on the size of the holes. The sliding head of the machine is mounted upon two large vertical rods. Diagonal braces support the rods against deflection. The head is moved up and down continuously by a cam, the rate of reciprocation depending upon the ratio of the differential gearing by which the cam is driven. The amplitude of the movement depends upon the shape of the cam. The lower part of the table carries the cam and its differential gearing and is clamped to the vertical rods when set for a particular job. The upper part of the table has an auxiliary



movement of 4 in. operated by a handwheel for dropping the fixtures away from the drills.

— 15 —

Drilling and Tapping Machines, Special

Fox Machine Co., Jackson, Mich. [Vol.60,p.490.]

Three special machines for drilling and tapping operations at high speed are being

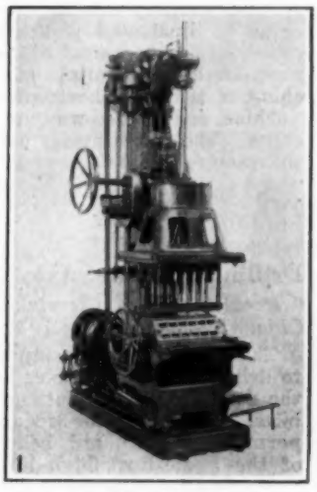


Fig. 1—Machine for pole pieces

marketed by this company. Two of the machines are for drilling and tapping pole pieces for small electrical machines. The rate of production on each machine is 2,160 pieces per hour. The spindles for these machines are carried in cluster plates that make it possible to assemble a large number of spindles in a comparatively small space. The head of the drilling machine is recipro-

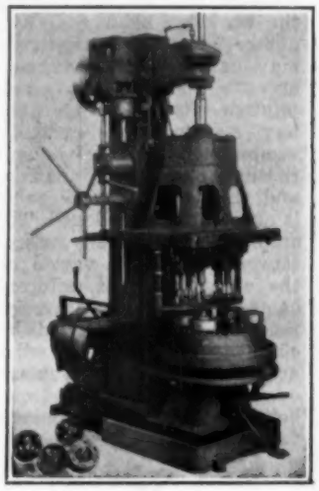


Fig. 2—Brake drum drilling machine

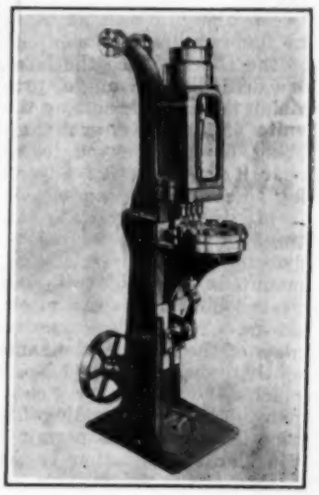
cated automatically by a cam and the work is held in a hexagonal drum fixture. The drum is automatically indexed and 12 pole pieces are drilled at the same time. The tapping machine is similar in construction with the exception of a suitable tapping mechanism. Another machine is designed to drill three automobile brake drums at once and is equipped with a 22-in. rotary work table. The spindles are mounted in a cluster plate and the jig is attached to the head.

— 16 —

Drilling and Countersinking Machine

Grant Manufacturing & Machine Co., 85 Silliman Ave., Bridgeport, Conn. [Vol. 60,p.601.]

This multiple-spindle machine is for use for the con-



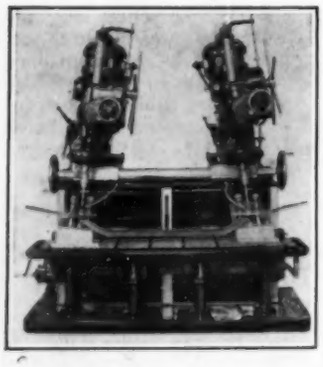
tinuous drilling and countersinking of small holes in manufactured parts. It has an indexing table to which suitable fixtures for holding the work are attached. Any number of spindles up to six may be used and are gear-driven through universal-jointed shafts. The knee has a continuous vertical reciprocating movement through a ditsance of 1¾ in. and the rotating work table is automatically indexed. The amplitude of the vertical movement may be varied by the substitution of different cams, and the rate of reciprocation may be varied by change gears. The spindles are driven by a belt from an overhead shaft and a second belt drives the automatic feeding mechanism.

— 17 —

Drilling Machine, Front Axle

Minster Machine Co., Minster, Ohio. [Vol. 60, p.637.]

This machine is of the duplex type and is arranged to drill both king-bolt holes in a front axle simultaneously.



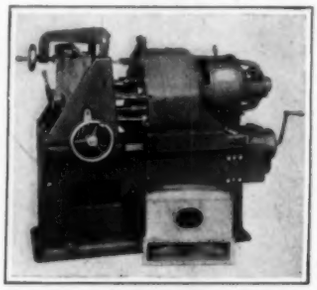
It consists essentially of two single-spindle drilling machine units mounted on saddles that slide on a planed bearing. The distance between the units is adjusted by handwheels at either end of the slide. Since the holes are drilled at an angle, provision is made for setting the units at an angle, each unit being pivoted on the inside near its saddle. An adjusting screw, vernier and clamp is provided for accurate setting. Each unit is motor-driven, the motors being mounted at the top and geared directly to the mechanism. The drilling mechanism of the units is the same as that of the standard No. 9 machine made by this company. The work-holding fixture is arranged to permit a considerable variation in the length of the forgings.

— 18 —

Drilling Machines, Multiple-Spindle

Greenlee Bros. & Co., 12th St. and Columbia Ave., Rockford, Ill. [Vol.60,p.865.]

These high-production, single-purpose drilling and tapping machines are designed to suit the work on which they are to be used, but are made up from a series of standard units. These standard units include frames,



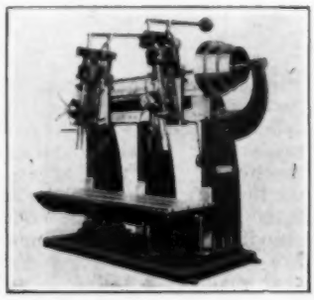
head slides, feed boxes and stop mechanisms. The heads are driven by individual motors mounted on the slides and all spindles, shafts and gearing in the heads are mounted in anti-friction bearings. Ball bearings are used if the center distances permit and roller bearings otherwise. Screw feed for the heads is furnished in some machines and cam feed for others. The heads are automatically returned when the drills or taps have reached the desired depth. A 27-spindle, one-way drilling machine is illustrated and the other styles consist of a right-angle horizontal machine, a two way horizontal machine, and a three-way machine. The latter model has the cam feed.

— 19 —

Drilling Machine, Axle

Foote-Burt Co., Cleveland, Ohio. [Vol. 60, p. 905.]

This machine is designed to drill the king-bolt holes in the front axles for automobiles. The machine incorporates the standard heads of the Foote-Burt high-duty



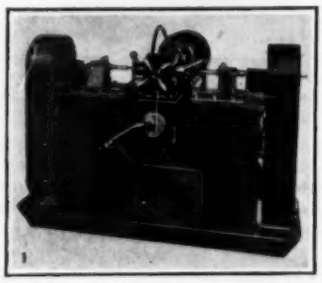
drills, together with the uprights, cross rail and table of the independent type machine. The heads are carried in a swivel arrangement in saddles, so that each head can be inclined at any angle up to 15 deg. either side of the vertical position. This arrangement provides for drilling the holes at the different angles specified in different axles. There are four changes of feed, and three changes of speed are available without the back gears. Back gears are provided as special equipment to increase the range of speeds.

— 20 —

Drilling Machine, Horizontal, Three-Way

William K. Stamets, Jenkins Arcade Building, Pittsburgh, Pa. [Vol.60,p.565.]

The arrangement of the spindles of this machine in relation to the work-holding fixture is apparent from the illustration. The feed of the



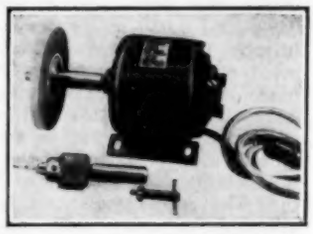
spindles is obtained by means of drum cams that provide quick travel, slow feed, and quick return for the drill carriages. Different feeds are available through the use of change gears. The adjustment of the drill spindles to drills of different lengths is quickly accomplished by means of a sleeve, rack and pinion. A clutch in the feed mechanism is arranged to be tripped automatically at the end of the cycle or operated manually at any time. The feed mechanism can also be operated by hand and a friction safety device is incorporated in the feed drive. The machine is motor-driven.

— 21 —

Drilling and Grinding Outfit, Portable

A. C. Bisgood, 286 Courtland Ave., Bridgeport, Conn. [Vol.60,p.157.]

This combination outfit consists of a fractional-hp. electric motor, a grinding wheel, a drill chuck and an adapter. The combination is useful for light grinding, burring, drilling small holes, and for light filing, such as would be done on a bench or speed lathe. The device can



be attached to any convenient lamp socket. The motor can be furnished to suit any current, voltage or frequency conditions of the power supply.

— 22 —

Drill, Hand, No. 12

Consolidated Tool Works, Inc., 296 Broadway, New York, N. Y. [Vol.60,p.308.]

This addition to the line of small tools made by this company has capacity for drills up to 5/32 in. in diam-

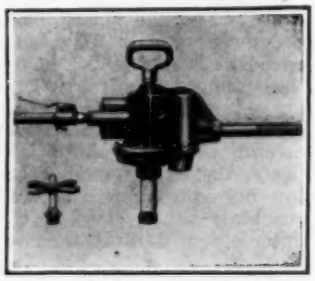
eter. The chuck is of the three-jaw type with spring jaws. The frame is of malleable iron and the large cast-iron gear drives a steel pinion on the spindle. Both gears have cut teeth. The length of the tool is 10 inches.

— 23 —

Drill, Air, Red Giant, No. 36

Chicago Pneumatic Tool Co., 6 East 44th St., New York, N. Y. [Vol.60,p.341.]

This portable air drill is designed especially for reaming and is adapted for both



drilling and reaming operations. The cylinders are of the double-acting type and the pistons are accurately ground to size. The connecting rods are attached to a

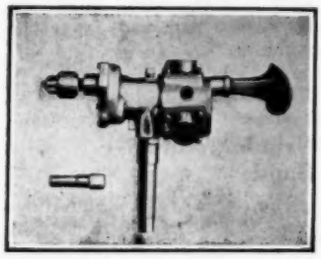
crosshead, preventing side thrust of the pistons against the cylinder walls. The valves are of the balanced piston type and are operated by eccentrics that are forged integral with the crankshaft. The crankshaft is mounted on three ball bearings and is geared to the spindle by a stub-tooth gear and pinion. The spindle is of the extension type with a tang slot for the ejection of the reamer or drill. The machine weighs 35 lb. and is well-balanced.

— 24 —

Drill, Pneumatic, Size D

Ingersoll-Rand Co., 11 *Broadway, New York, N. Y.* [Vol.60,p.566.]

This light-weight, non-reversible drill may be fitted with either breast-plate, feed screw, or grip handle, and is



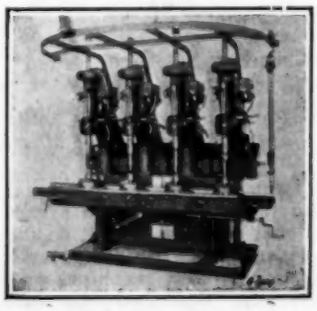
therefore adapted for a wide variety of work. The chuck capacity is for drills up to 9/16-in. and 5/16-in. reamers. The recommended speed with air pressure at 90 lb. per sq. in. is 700 r.p.m., the drill being driven by a three-cylinder motor. The case is aluminum with steel bushings cast in all the bearing holes and the throttle hole. The cast-iron cylinders are renewable and interchangeable, and all rotating parts are accurately balanced to reduce vibration.

— 25 —

Attachment, Jig-Handling, for Barnes Gang Drill

Barnes Drill Co., 820 *Chestnut St., Rockford, Ill.* [Vol.60,p.451.]

This apparatus consists of



an overhead track with a trolley for returning the jig to the loading position after the work has passed beneath the four spindles of the gang and the operations have been completed. Upon the completion of the machining under the last spindle, the work is removed from the jig and the jig is returned to the other end of the machine for the next piece. A wire bail or handle is attached to each jig, so that it can be quickly attached to the hook at the lower end of the trolley hoist chain.

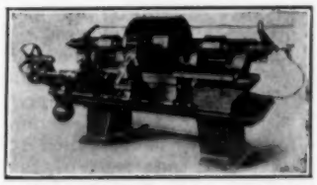
Grinding Machines

— 26 —

Grinding Machine, Spring, Coil

Charles H. Besly & Co., 118 *N. Clinton St., Chicago, Ill.* [Vol.60,p.151.]

This machine is designed for the purpose of grinding the ends of coil springs rapidly and accurately. It consists primarily of two heads mounted on ways, each head carrying a spindle with a grinding wheel attached to its inner end. The heads can be adjusted and clamped at any point to accommodate



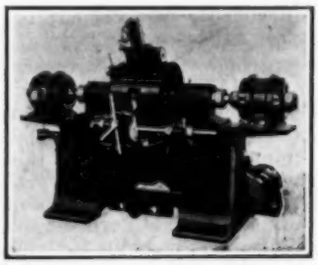
springs of any length up to 15 in. The springs are placed in a detachable work fixture held in a power-driven device that oscillates on a rocker shaft at the front of the machine. The movement of this rocker shaft is obtained through a connecting rod attached to a crank on a driving shaft. The fixture holds 18 springs and its weight is balanced by a suitable counterweight. The depression of a treadle causes the wheels to move apart so that the work can pass to its grinding position and upon the release of the treadle, the wheels close in upon the work and grind the ends off to the length determined by the setting of stops on the spindles.

— 27 —

Grinder, Disc, Double-Spindle, No. 27

Gardner Machine Co., 410 *East Gardner St., Beloit, Wis.* [Vol.60,p.483.]

This machine has two opposed spindles, each carrying at its inner end an abrasive disk wheel or an abrasive ring mounted in a chuck. The spindles are mounted in bearings in sliding heads which are operated by an Oilgear hydraulic feed. This mechanism consists of a double-acting cylinder with its piston directly connected to the left-hand head and operating the other through a rack and pinion arrangement. An Oilgear variable-delivery pump supplies the oil to the cylinder, and is fitted with suitable relief valves so that the



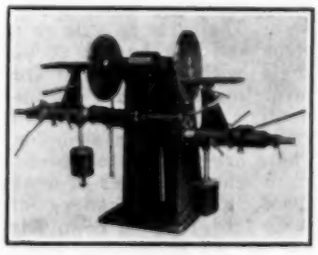
pressure on the wheels will not become excessive. A micrometer stop for the heads is provided. The spindles are mounted in SKF ball bearings. The work is held in a fixture on a counterbalanced swinging arm, the arm being hinged on a bracket bolted to the base of the machine. The machine is built for either belt or motor drive. For motor driving a 7½-hp. motor is mounted on each spindle.

— 28 —

Grinder, Disk

Carpenter Engineering & Machine Co., 522 *Corn Exchange Bldg., Minneapolis, Minn.* [Vol.60,p.671.]

The outstanding feature of this machine is the means provided for mounting the work table, by which the table height is adjusted and



the proper feed and traverse of the work is obtained. The table is clamped at the top of a bracket which is fitted on a long trunnion and the table bracket is swung on the trunnion to traverse the work across the grinding wheel. A 45-deg. adjustment of the table is provided and the table can be quickly clamped at the desired position by means of a clamp handle. The trunnion is carried in a U-shaped bracket pivoted on the base of the machine and this bracket is moved about its pivot and clamped in position to vary the height of the table. A micrometer stop is provided to limit the movement of the table toward the face of the wheel. All clamp screws are operated by handles.

— 29 —

Grinder, Wheel and Disk, Combination

United States Electrical Tool Co., Cincinnati, Ohio. [Vol.60,p.788.]

This machine is motor-driven, the spindle carrying an abrasive wheel of the standard type at one end and a 24-in. grinding disk at the other. The spindle rotates at 1,120 r.p.m. and the motor capacity is 5 hp. The work to be ground on the disk is attached to the table in which suitable T-slots are provided. The table can be oscillated

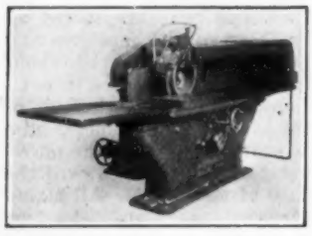
on its trunnion and a vertical height adjustment is provided. A handle is attached to the table by which it can be given a horizontal movement. The abrasive wheel end is fitted with a hinged wheel guard that has an exhaust connection. Push-button control is provided for the motor. When the table is oscillated the weight acts as a counter-balance. For holding the spindle stationary to remove the wheel clamping bolts, a self-releasing pin is pushed into one of four slots in a disk on the spindle.

— 30 —

Grinding Machine, Face, 18-In.

Diamond Machine Co., Providence, R. I. [Vol.60,p. 155.]

This machine is an addition to the line of similar machines made by this company. It is rigidly constructed and is driven by two motors, a



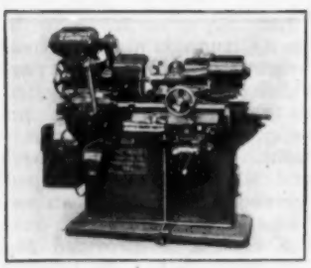
10-hp. motor driving the abrasive wheel through a silent chain and a ¾-hp. motor driving the table by means of belts. The 18-in. wheel is of the solid ring type and the spindle is carried in bronze-bushed bearings with ball bearings to take the thrust. The table is 14 in. wide and is equipped with cross feed operated by hand. The machine is built with various capacities to handle work from 24 to 60 in. in length and 10 in. in height. If desired, the allowable height can be increased to 14 in. by removing the guard flap from the grinding wheel cover. It is stated that the finishing of flat surfaces usually machined on the planer or milling machine is a type of work to which this machine is particularly adapted.

— 31 —

Grinding Machine, Motor-Driven, No. 73

Heald Machine Co., Worcester, Mass. [Vol.60,p.227.]

This machine follows the general design of the No. 72 grinding machine manufactured by this company with



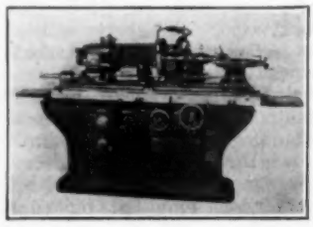
the exception of the drive. Three small motors are used for driving and consist of a ¾-hp., variable-speed, d.c. motor for the work head; a 3-hp. constant-speed motor for the wheel head; and a 1½-hp., constant-speed motor driving the rear shaft and furnishing power for the hydraulic table traverse. The work head is driven by its independent motor through a silent chain, the speed of the motor being controlled by means of a rheostat. If direct current is not available for this motor, a motor generator can be furnished and arranged as a part of the machine. The wheel head is driven from its motor by an endless belt for which a suitable tightener is provided. This motor has push-button control. The third motor drives the rear shaft through a silent chain and starts and stops with the wheel-head motor, being controlled by the same push button.

— 32 —

Grinding Machine, Universal, No. 2-I

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.60,p.487.]

Features of former models of machines made by this company are retained in this machine and additional productive features have been built in. A hand lever at the front of the machine controls the table and work and the same lever actuates a brake for stopping. The machine takes work up to 14 in. in



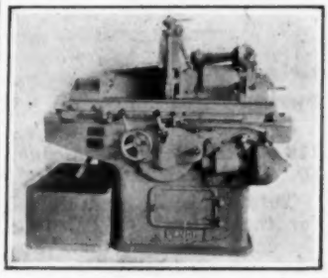
diameter by 36 in. in length and swings 12½ in. over the water guards. The single drive pulley runs at 900 r.p.m. and the machine is adapted for motor driving. The wheel spindle is driven by belt from the drive shaft of the machine, suitable idlers being arranged to keep constant tension on the belt regardless of the position of the wheel slide. The greater part of the machine has flood lubrication from a tank in the base. The table swivels on a pivot and can be set at an angle with the ways. The reversing mechanism is sufficiently accurate to permit grinding close to a shoulder. There are four wheel speeds, 12 indicated changes of work speed, and 12 changes of table feed, ranging from 6 to 128 in. per minute.

— 33 —

Grinding Machine, Hydraulic Traverse

Landis Tool Co., Waynesboro, Pa. [Vol. 60,p.675.]

Unlike most of the grinding machines brought out by this company, this machine has a traversing work carriage instead of the usual traversing wheel head. This is done because a 24-in.



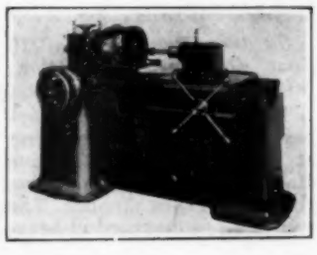
grinding wheel is used and the wheel head is too heavy to be traversed without requiring an excessive amount of power. The machine has capacity for work up to 6 in. in diameter and 30 in. long. The carriage slides on two V-guides and is traversed by a special hydraulic drive that permits speeds from 6 in. to 40 ft. per min. Oil pressure is supplied by a geared pump and the speed is controlled by a lever at the front of the machine. The piston of the oil cylinder operates the carriage through a system of levers, so that a comparatively low pressure is used and the possibility of leakage is reduced. The rotation speeds of the work may be varied from 150 to 800 r.p.m. the power being obtained by means of a belt from the drive shaft of the machine. The grinding wheel feed is operated either automatically or by hand.

— 34 —

Grinding Machine Internal, Hand-Operated, "Tero"

Giddings & Lewis Machine Co., Fond du Lac, Wis. [Vol. 60,p.863.]

This machine is self-contained and is motor-driven, three independent motors be-



ing provided to drive the work head, the grinding spindle head and the coolant pump, respectively. The machine can be used to grind holes from ½-in. in diameter up to the capacity of the machine, which is only limited by the 16-in. swing over the ways. The grinding carriage is arranged to slide upon the ways and is traversed by means of a pinion and rack operated by a large pilot wheel. The motor for the grinding wheel is mounted on the carriage and drives through a belt. The work head is moved across the bed by means of a hand-operated feed mechanism. The motor for the work spindle is mounted on the head and drives through a series of change gears mounted in a suitable casing. From the gear box the work spindle is driven by means of a silent chain. Both the grinding unit and the work head can be easily removed from the machine.

— 35 —

Grinder, Abrasive Band

Walls Sales Corp., 96 Warren St., New York, N. Y. [Vol. 60,p.269.]

This small grinder is fitted with tight and loose pulleys and has an extra outboard bearing with a movable shifter fork to meet various belt angles. The work table is 10½x5 in. and the abrasive band is 4 in. wide. The machine is especially adapted for finishing work on a variety of materials where a

straight-grain finish is required. A variety of bands can be furnished in many grits to suit any finish required.

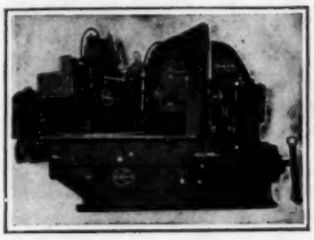
— 36 —

Grinder, Surface, No. 27-R, Special

Blanchard Machine Co., 64 State St., Cambridge, Mass. [Vol.60,p.341.]

The feature of this special surface grinder is its exceptional size. It is built on the general design of the standard No. 27-R machine, previously described in the

American Machinist, and is shown with a No. 10 Blanchard grinder placed on the chuck to show the relative sizes of the two machines. The grinding wheel is 36 in.



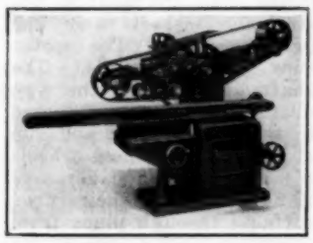
in diameter, the magnetic chuck being 60 in. in diameter with a 76-in. extension ring added to it. The water guards have been made wider, the base of the machine has been lengthened, and other minor changes have been made so that the machine will accommodate work 84 in. in diameter. The wheel head contains a 60-hp. a.c. motor and weighs 7,000 lb. with the grinding wheel. Four speeds for the chuck are available through sliding gears. The total weight of the machine is 43,000 pounds.

— 37 —

Finishing Machine for Flat Work

Production Machine Co., Greenfield, Mass. [Vol.60,p. 343.]

This abrasive belt grinder is designated the type F and is adapted to the polishing or finishing of flat work. The work is carried to the abra-



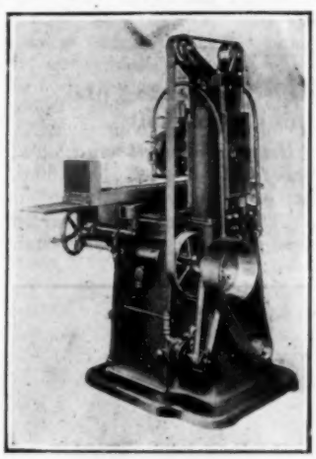
sive band on a belt conveyor mounted on a knee attached to a cabinet base. A column at the rear of the base carries the belt pulleys and their driving mechanism. A short leather belt provides backing at the grinding position for the longer abrasive belt. The operator has only to load the parts to be finished on the conveyor and they are then carried under the abrasive belt to the delivery end of the conveyor. Work shorter than 6 in. may be placed on wooden blocks attached to the conveyor belt, longer work requiring the use of cleats for the work to thrust against. Various thicknesses of work are accommodated by raising or lowering the knee on which the conveyor is mounted. Hand fixtures can be used for the polishing of flat pieces which cannot be handled to advantage on the belt.

— 38 —

Grinder, Surface, Automatic, No. 78, Motor-Driven

Wilmarth & Morman Co., Grand Rapids, Mich. [Vol. 60,p.485.]

In the motor driving arrangement with which this machine is now being marketed the motor is located in the base of the machine where it is protected from



grit, dust and water, and it is possible to guard all belts effectively. The use of ball bearings decreases the power required for driving so that a 2-hp. motor is sufficiently large for driving. The control for the longitudinal table travel has also been improved, so that one movement of the hand lever is now sufficient to change directly from hand feed to automatic feed. Another feature is a ball-bearing type clutch which is an improvement over the former device as it practically eliminates vibration when the table reverses at each end of the stroke. The complete motor-driven machine weighs 2,200 pounds.

— 39 —

Grinder, Wide Swing

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.60,p. 305.]

The wheels of this floor grinder are spaced 37 in. apart, making the machine especially suitable for the grinding operations in fitting and assembling castings in stove, furnace and heater work. The spindle is mounted in four ball bearings and is

of one-piece construction. Adjustable, open-end wheel guards or enclosed guards can be furnished. The guards are interchangeable. The machine is equipped with a 3-hp. motor and is designed to carry two 14x2 in. grinding wheels. The control button for the motor is located at the front of the machine, the switch proper being enclosed in the base.

— 40 —

Grinder, Floor, Heavy-Duty, 5-Hp.

Cincinnati Electrical Tool Co., 1501 *Freeman Ave., Cincinnati, Ohio.* [Vol.60,p.905.]

The 5-hp. motor of this machine is equipped with ball bearings and is fully enclosed to prevent the entrance of

dust and grit. The spindle will carry wheels up to 18 in. in diameter with a 3-in. face. The wheel guards are of the exhaust type and are adjustable for the wear of the wheels. Removable covers bolted to the guards completely enclose the wheels. The starting switch is of the magnetic type and is operated by a push-button control. The switch is mounted on a separate panel within the column. The motor can be furnished for 2- or 3-phase alternating current, 220 or 440 volts, and from 25 to 60 cycles.

— 41 —

Grinder, Heavy-Duty

Cleveland Armature Works, 4732 St. Clair Ave., Cleveland, Ohio. [Vol.60,p.983.]

This machine is featured by a motor drive, taper roller bearings for the spindle, and a number of construction features that make the adjustments and the manipulation of the machine convenient. The motor is designed and built especially for the machine. The spindle is made of chrome-nickel steel and is mounted in taper roller bearings that can be adjusted to compensate for wear. The

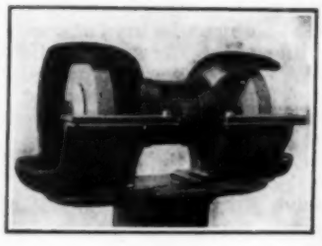
wheel flanges are of steel, the inner flanges being keyed to the spindle. Wire glass eye shields are mounted in metal frames attached to the wheel guards. The guards are steel castings and swing covers are hinged at the ends. A positive wheel lock is provided to hold the spindle while manipulating the wheel nuts. The spindle center is 34 in. above the floor. The machine is built in two sizes carrying 18- and 20-in. wheels respectively. Steel plates in the upper guard openings are provided to deflect sparks and wheel fragments in case of fracture. A positive shaft lock is provided to hold the spindle stationary when wheels are being changed. The heavy base of the machine is filled with concrete to reduce vibration.

— 42 —

Grinder, Tool, Model 106

Forbes & Myers, 172 Union St., Worcester, Mass. [Vol. 60,p.344.]

The distinctive feature of this grinder is the method used for cooling the motor. Two fans are attached at



one end of the rotor and these blow a current of air across the windings and against the aluminum wheel guards. These guards are good heat conductors and dissipate the heat readily to the outer air. The motor is rated at ¾ hp. and is of the squirrel-cage induction type, built to suit the characteristics of the available current. The rotor is mounted in ball bearings that are packed with grease. The machine carries two 10x1¼-in. wheels and runs at 1,800 r.p.m. on 60-cycle current. The tool rests are supported on the aluminum casting that forms the frame of the motor and the wheel guards.

— 43 —

Grinder, Tool, Young

Keuka Industries, Inc., Hammondsport, N. Y. [Vol. 60,p.526.]

The feature of this grinder is the design of the bearings which are constructed to make the entrance of

dirt and grit difficult. The spindle overhangs into an oil well at each end of each bearing and picks up a bead of oil as it rotates. This bead seals the bearing surfaces against the entrance of foreign material. The fine abrasive particles are caught in the bead and are deposited as sediment in the bottom of the well. The thrust of the spindle is taken by V-shaped collars that fit suitable grooves in the bearing. The spindle is sufficiently large so that it tends to eliminate whip, and the wheels are placed far enough apart so that both can be used at once without interference. Solid tool rests that can be pushed back out of the way when not in use are provided. The machine can be belted to a countershaft or can be furnished with a loose pulley for driving direct from the line-shaft.

— 44 —

Grinder, Tool and Cutter, Universal, No. 1, Motor-Driven

Wilmarth & Morman Co., Grand Rapids, Mich. [Vol. 60,p.561.]

The rather unusual motor drive now fitted to this machine eliminates the awkward superstructure previously required around and above the machine, and there are no belts to interfere with complete freedom of operation. A ½ hp. motor is mounted on a bracket directly above the main head and drives the grinding spindle through a short belt suitably guarded. The ¼ hp. motor for the table feed is

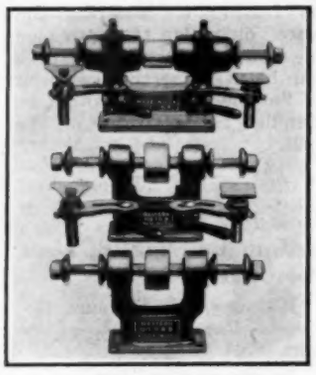
mounted beneath the left-hand end of the table near the gear box and is also close-connected. The use of these motors permits both head and table to be swung through 360 degrees. The work head-stock is provided with a ¼-hp. motor and is carried on a bracket that is a part of the headstock casting. The controlling switches for the motors are located in an accessible position on the knee below the table.

— 45 —

Grinders, Ball-Bearing, "St. Louis" and "Western"

St. Louis Machine Tool Co., St. Louis, Mo. [Vol.60,p.566.]

The No. 1 "St. Louis" grinder at the top in the illustration has its spindle mounted in four ball bearings. The arbor is 16 in. long and is ⅝ in. in diameter between the collars. The dimensions and construction of this and the other ball-bearing models shown are the same as for the babbitt-bearing machines made by this company. The "Western"



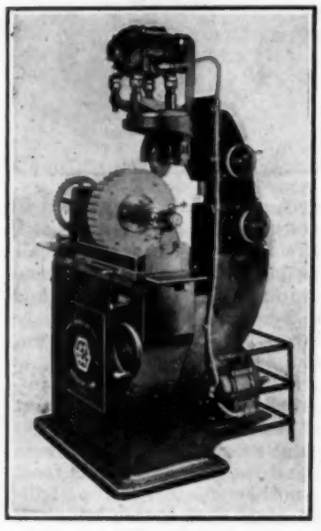
models have one ball bearing at either end of the spindle. Felt retainers are provided at each end of the bearings and the bearings are lubricated by oil.

— 46 —

Hob-Sharpening Machine, No. 160

Harris Engineering Co., Bridgeport, Conn. [Vol.60,p. 601.]

This machine is similar in design but larger in size than



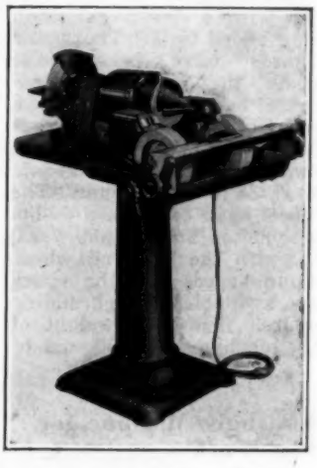
the former models made by this company, and will handle hobs from 6 to 16 in. in diameter. The hob-carrying spindle, the tail-stock taper support, and the indexing mechanism are fitted with ball bearings of the Hess-Bright type. Arrangement is made for adjusting the hob to the grinding wheel so that the proper angle of the tooth faces is preserved. The motor drive for the table reverse and indexing mechanisms is mounted at the back of the machine, a suitable reduction gear being built in. The grinding wheel has a separate motor drive, the spindle being driven through an open belt. The motor is adjustably mounted on the wheel head and the head has both vertical and horizontal adjustments. The machine can be also furnished for belt driving if desired, and to handle either right- or left-hand spiral-fluted hobs.

— 47 —

Grinder, Tool, Oilstone, No. 475

Mummert-Dixon Co., Hanover, Pa. [Vol.60,p.713.]

This machine has a coarse oilstone wheel, a fine oilstone wheel, a grinding cone, an



emery wheel and a leather-faced stropping wheel. All shafts are mounted on ball bearings. The emery wheel is carried on a shaft driven direct from the motor through a flexible coupling, and at the other end of the motor shaft are mounted the stropping wheel and the grinding cone. The motor runs at 1,800 r.p.m. The shafts that carry the two oilstone wheels are geared to the motor shaft and run at 600 r.p.m. These wheels are cup-shaped and kerosene oil is applied to their inner surfaces through pipes from reservoirs. An adjustable slide table extends across the machine in front of the oil stone wheels and may be tilted to any desired angle. This table carries a sliding tool holder for holding chisels, plane bits, and similar tools.

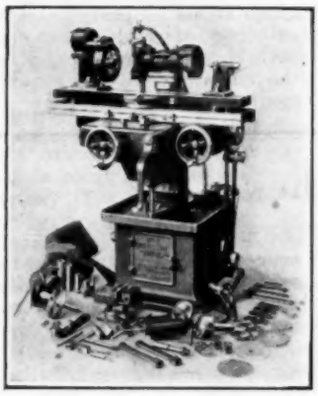
— 48 —

Grinder, Cutter and Tool, Universal, "Grand Rapids"

Gallmeyer & Livingston Co., Grand Rapids, Mich. [Vol.60,p.981.]

This machine is made in two sizes, each of which has a swing of 10½ in., a transverse movement of 10 in., and

vertical movement of 10½ in. The longitudinal travel on the No. 3 is 18 in., and 24 in. on the No. 4. The wheel head, headstock, column and table can be swivelled in a horizontal plane and the headstock can also be swivelled vertically. Individual motors drive the wheel and work spindles, the wheel motor being mounted in the base and the work spindle motor on the headstock. The wheel spindle is driven through a belt and suitable idlers are provided to guide the belt. There are four power automatic feeds for the table, two



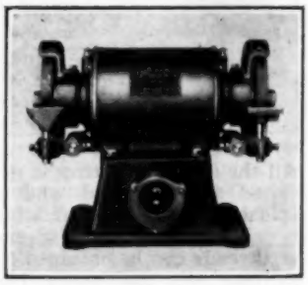
of which are obtained through belts and two by gears. For internal grinding the wheel spindle is bolted to the regular wheel head, just below the pulley. It is driven by a belt from the regular spindle.

— 49 —

Grinder, Bench, Two-Wheel, 6-In., Hisey

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.60,p. 981.]

This machine is similar in design to the larger machines made by this company and is adapted for light grinding. The spindle is mounted in



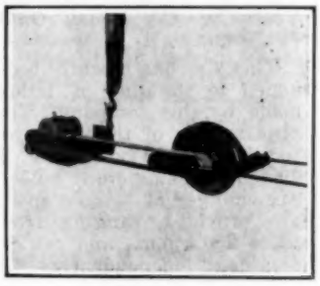
ball bearings and the ¼-hp. motor can be furnished to suit any current requirements. The motor switch is enclosed in the base and incorporates a thermostatic control that protects the motor. The spindle bearings are enclosed and fitted with felt washers. Standard open wheel guards or safety combination guards can be furnished. The latter are adjustable for different sizes of wheels, have removable end covers, and are fitted with exhaust pipe connections. The grinding rests are adjustable and can be removed.

— 50 —

Grinder, Swing-Frame, Manhattan

Riverside Production Co., Newark, N. J. [Vol.60,p. 904.]

The novel features of this machine are the method used to maintain the frame in balance as the wheel wears, and the mounting of the wheel so that it can be easily changed. The frame is suspended from a chain fall or similar support in the usual way and, when the wheel is new the hook is attached in the outer one of the row of holes in the upper edge of the suspension plate. As the wheel wears the point of suspension is moved back from hole to hole. The arbor



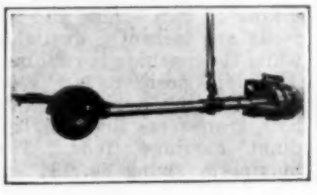
on which the wheel runs is held in the yoke of the frame by means of two swinging clamps. The wheel and its pulley are mounted in ball bearings on the arbor. The driving motor is carried on an offset drop bracket at the opposite end of the machine. A 24-in. wheel with a 3-in. face is used.

— 51 —

Grinder, Swing-Frame, Motor-Driven

Diamond Machine Co., Providence, R. I. [Vol.60,p. 906.]

This machine is built in two sizes, the smaller of which carries a 12 x 2-in. grinding wheel driven by a



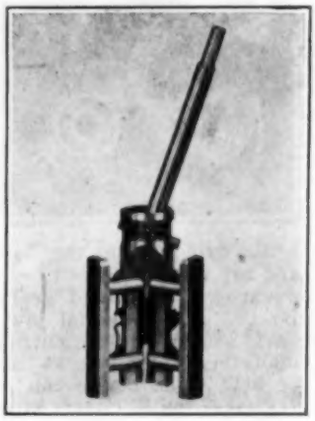
3-hp. motor at 1800 r.p.m. The larger grinder is equipped with a 5-hp. motor that runs at 1,200 r.p.m. and drives an 18x4-in. wheel. The motor is mounted on an end-piece fastened to the hollow arm of the machine in which the driving shaft revolves. At the wheel end a set of nickel-steel gears drive the wheel and are fully enclosed. All shafts run in ball bearings. The wheel can be quickly removed by taking off the side plate of the safety guard and the wheel flange. The wheel head is arranged to swivel and can be rotated 90 deg. either side of the vertical position. The motor is controlled by a push button attached to the operator's handle.

— 52 —

Grinder, Bore, Cylinder, Portable, Hutto

Grinder Sales Co., 526 West Fort St., Detroit, Mich. [Vol. 60.p.524.]

This tool is adapted for regrinding operations and it is possible to perform the work on open-end cylinders without removing the motor from the chassis. The device carries three grinding stones in suitable holders, the outside diameter over the stones being adjusted by a set of opposed cones or wedges



at the center. These wedges are adjusted by a screwdriver inserted at the top. The top socket has slots in which the pins of the driving shank are inserted to turn the tool. The operation is started by inserting the device in the bore, tightening the screw until the stones are against the cylinder wall, then inserting the driving shank or handle. The other end of the handle is held in the chuck of a portable electric drill and the grinder is passed up and down in the bore as it rotates.

— 53 —

Grinder, Railway, No. 177

Luther Grinder Manufacturing Co., Milwaukee, Wis. [Vol.60,p.527.]

This hand-operated machine is designed for use in grinding either flat or twist drills, chisels, dies, or similar tools, using the attachments supplied with the machine. An attachment intended to make it posisble for an unskilled workman to grind the correct angle on a drill is furnished and has but two adjustments. The at-

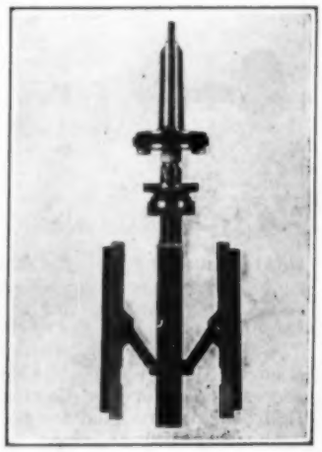
tachment for grinding flat drills can be applied to hold the drill in each of three different positions, enabling the operator to grind the proper clearance on the drill and to grind a rake on the cutting edge. A wheel dresser is supplied. A Luther "Dimo-Grit" wheel is standard equipment on the machine.

—54—

Hone, Cylinder

Campbell Auto Works, 232 N. El Dorado St., Stockton, Calif. [Vol.60,p.640.]

This device is for burnishing internal combustion engine cylinders after they have been rebored or reground. It may also be used for refinishing cylinders that have been slightly scored, but not worn out of round or tapered. The adjustment of the diameter of the hone is made by means of a knurled collar located below the driv-



ing spindle and a range from 2⅜ to 5 in. in diameter is provided. The stones are mounted in aluminum holders. The universal joint is a thermoid coupling, and the tool can be used with a drill press or a portable electric drill.

— 55 —

Sharpener, Reamer

Foster-Johnson Reamer Co., Elkhart, Ind. [Vol.60,p.789.]

This apparatus is designed to accommodate the general run of solid and adjustable reamers up to 2½ in. in diameter. The reamer is held on two centers and can be clamped in various positions in the frame bearings. A tooth rest is located at the back of the device, and at the front is provided an adjustable support for the hone carrier, this support being raised or lowered to suit the angle of the reamer blades. The hone is moved back and forth over the reamer blades by hand until the blade has

been properly sharpened. The maximum distance between centers is 12⅜ in., 4 in. being the minimum.

— 56 —

Grinder and Air Motor, Portable

Cleveland Pneumatic Tool Co., Cleveland, Ohio. [Vol. 60,p.866.]

The wheel arbor of the grinder illustrated in Fig. 1 is direct-connected to the crank of its air motor which

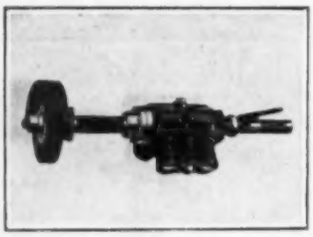


Fig. 1—Portable grinder

rotates at a speed of 4,600 r.p.m. The abrasive wheel is 6 in. in diameter and the complete device weighs 12 lb. The forward arbor extension is covered by a housing which serves as the forward handle. Ball bearing are used for the connecting rod bearings as well as the crank bearings and all bearings run in a bath of oil. Four types of throttle valves are furnished.

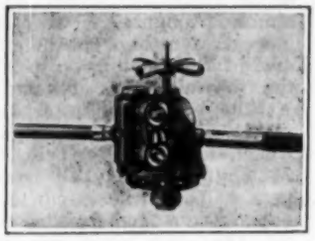


Fig. 2—Portable air motor

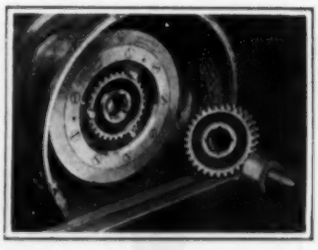
The body of the machine is split on the center line of the shaft bearings so that the entire crank assembly can be removed without disconnecting the pistons or valves from the crank. The construction of the air motor, Fig. 2, is similar to the motor of the grinder. It is adapted for such operations as drilling, reaming, tapping, flue-rolling, and for setting plain and flexible staybolts, sleeves and caps.

— 57 —

Chucks, Grinding, Gear, Bolender

City Engineering Co., Fourth and St. Clair Sts., Dayton, Ohio. [Vol.60,p. 380.]

These chucks are made for holding gears accurately



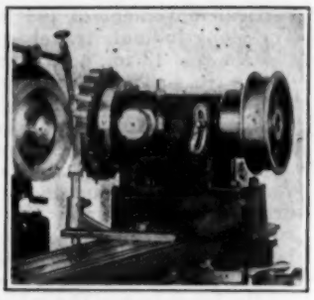
while grinding in the bore and are made in sizes to suit a variety of sizes of gears. By the use of special jaws, parts as large as the outside diameter of the chucks can be held. The device can be furnished with either three or five jaws, each jaw being equipped with a hardened steel pin when holding spur gears. It is claimed that by this means spur gears are held concentric within 0.001 in. without particular attention by the operator. The jaws are located in slots in the body of the chuck and are forced toward the center by a ring that fits the taper of the back of the jaws. The ring is moved by a nut with a square thread located on the rear end of the chuck body. The jaws are moved outward by a spring as the ring is moved forward.

— 58 —

Grinding Attachment, Milling Cutter

Thompson Grinder Co., Springfield, Ohio. [Vol.60,p. 522.]

This headstock has a 32-in. swing. The spindle is mounted in roller bearings and has a perpendicular swivel through an angle of 30 degrees. The spindle frame mounting also permits a horizontal swing of 90 degrees. The spindle is 5 in. in diameter and is fitted with a 10-in. flange, slotted to correspond to the flange on any milling machine spindle. It has a No. 16 B&S taper hole. The cutter is bolted directly to the flange in the same position it would occupy on the



milling spindle. The attachment can be mounted at either end of the grinder table so that it will accommodate either right- or left-hand cutters. The swivel adjustments permit the grinding of both face and periphery without removing the cutter from the attachment.

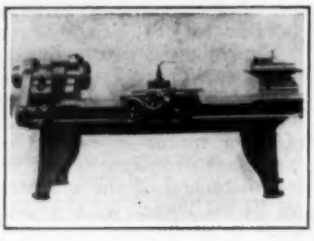
Lathes

— 59 —

Lathe, Rapid-Production, Heavy-Duty, 17-In.

R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.60,p.226.]

This size has recently been added to the line of lathes made by this company. The headstock is of the selective-speed geared type and is driven by a single belt pulley. Six changes of spindle speed are provided, ranging from 50 to 250 r.p.m., and can be obtained independently. A



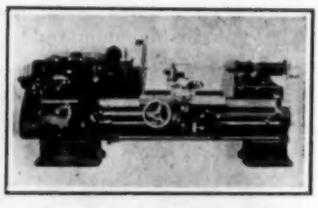
multiple-disk clutch is operated by a lever located on the front of the headstock. The entire range of spindle speeds is obtained by the manipulation of two levers. The feed gearing is located in a box attached to the frame below the headstock and is driven directly from the spindle through a heavy roller chain. Nine changes of feed can be obtained by means of two levers and all feeds are instantly available while the machine is running. A single positive jaw feed clutch in the apron controls both transverse and longitudinal carriage feds. The maximum swing is 18¼ in. over the shears and 12¼ in. over the carriage. Motor drive can be arranged, if required.

— 60 —

Lathe, Geared Head, 30-In.

Cincinnati Lathe & Tool Co., 3207-3211 North St., Cincinnati, Ohio. [Vol.60,p. 340.]

This lathe can be furnished either with motor or belt drive. The swing over the bed is 30¼ in. and over the bottom slide, 21 in. The clutch is an integral part of the head and is controlled by levers at the right-hand side of the apron and at the headstock. Twelve spindle speeds are quickly available, and range from 9 to 325 r.p.m.



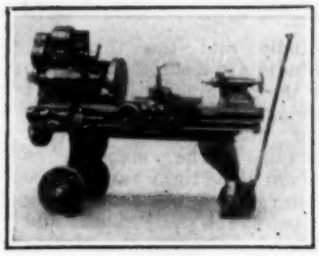
All the spindle gearing is enclosed in the head and a splash system of lubrication is used. A range of 32 speeds or threads can be obtained by shifting only two levers. The distance between centers with a 12-ft. bed is 84 in. For motor driving the lathe requires a 10-hp. motor running at 1,200 r.p.m. The motor may be mounted on the back of the frame leg and drives the spindle by means of a silent chain.

— 61 —

Lathes, Portable, Heavy-Duty

R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.60,p.342.]

Three sizes, 11-, 15-, and 17-in., are included in this line of portable lathes. The lathe is mounted on three substantial wheels, the han-



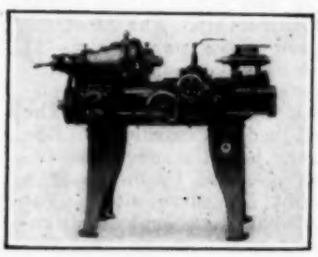
dle at one end of the machine being mounted in such a way that it keeps the machine from moving on the floor when released. Geared or belted motor drive is furnished on the two larger sizes, the 11-in. lathe being equipped with the belted drive only. The electrical controlling apparatus is an integral part of these machines and it is only necessary to carry the current to the switch. Six spindle speeds are available on the 11-in., nine on the 15-in., and twelve on the 17-in. lathe. Nine changes of feed are furnished on the smaller machine, the larger sizes having a range of 32 feeds and threads. The hp. of the motors varies from 3 for the smallest to 5 for the large machine.

— 62 —

Lathe, Rapid Production, Cone-Driven, 11-In.

R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.60,p.484.]

The headstock of this lathe is of the three-step cone open-belt type without back gears and is designed for spindle speeds up to 1,250 r.p.m. The spindle is machined from a crucible steel forging and is mounted in ball bearings suitable for the high speed. A multiple disk



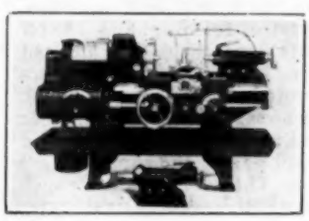
friction clutch is embodied in the largest step of the cone and is operated by a lever on the front of the headstock. The carriage has a long bearing on the shears and a screw-operated tailstock is regularly furnished. A lever-operated tailstock can be furnished if desired. The lathe swings 13¾ in. over the shears and 8¾ in. over the carriage. The feed box provides nine changes of feed and these are obtained through the operation of two levers. The feeds range from 0.008 to 0.092 in. per revolution of the spindle. An automatic back-facing attachment and a taper attachment can be furnished.

— 63 —

Lathes, Manufacturing, Friction Head

Monarch Machine Tool Co., Sidney, Ohio. [Vol.60,p.525.]

This series of lathes is built in four sizes from 14- to 20-in. Heavy ball thrust bearings are provided in the headstock and the friction clutches are of the proper size to operate well under the heaviest cuts in the capacity of the lathe. Back gears can be installed if desired. These lathes are particularly adaptable for special requirements, since they can be built in practically any style and with special attachments to suit the work. Special devices can be furnished to meet the requirements of high-speed production of du-



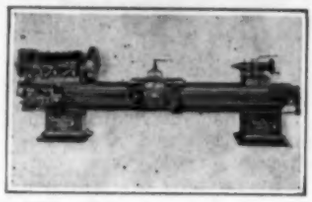
plicate parts. The spindles are made from high-carbon steel forgings and are mounted in phosphor-bronze bearings. A quick-change gear box that provides 32 changes of feed or thread can be furnished. All gears are of steel.

— 64 —

Lathe, Geared-Head, with Cabinet Legs

Morris Machine Tool Co., Court and Harriet Sts., Cincinnati, Ohio. [Vol.60,p.639.]

This 22-in. geared-head lathe is now being furnished with cabinet legs and a clutch control at the apron. The headstock is equipped with a single pulley for belt driving, but a motor drive can be furnished. The lathe swings 23 in. over the ways and 15¼ in. over the carriage.



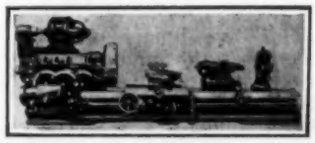
The minimum length of bed is 8 ft. and the distance between centers for this length of bed is 3½ ft. The quick-change mechanism provides 45 changes of thread and feed, and the geared head gives 12 changes of spindle speed.

— 65 —

Lathe, Heavy-Pattern, 36-In.

American Tool Works Co., Cincinnati, Ohio. [Vol.60,p. 677.]

This lathe swings 40½ in. over the bed and 27½ in. over the carriage, providing a distance between centers, with



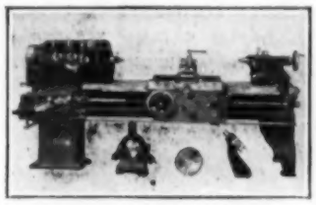
a 12-ft. bed and tailstock flush, of 4½ ft. A feature of the machine is the 18-speed geared head of the selective speed type which is provided with both faceplate and spindle drives and can be either belt- or motor-driven. The faceplate drive gives 12 of the 18 speeds, only six speeds being transmitted through the spindle. All speeds are obtained through the use of 16 gears, including the faceplate gear and pinion. The spindle and all other shafts are mounted in brone bushings and an automatic oiling system lubricates all gears and shafts in the head. The starting clutch and brake are incorporated in the driving pulley or gear and are operated by a mechanical apron control. Other usual features of lathes made by this company are provided. The quick-change gear mechanism gives 48 changes of thread and feed, and additional threads can be cut by the application of additional gears on an auxiliary quadrant at the end of the bed. When driven by a variable-speed motor, an electrical apron control can be furnished.

— 66 —

Lathe, Geared-Head

Cisco Machine Tool Co., Cincinnati, Ohio. [Vol.60,p. 788.]

This lathe can be furnished in five sizes, ranging from 14- to 26-in. in 2-in. steps. A feature of the machine is the geared headstock. The cover contains no mechanism and can be easily removed. The end thrust of the spindle is borne by a ball-bearing thrust washer. All gears are constantly in mesh and 12



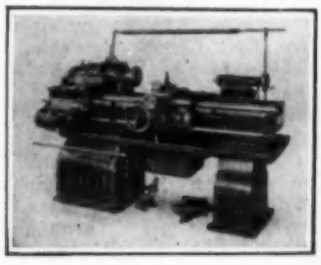
changes of speed in geometrical progression are obtained through positive clutches. No two speeds can be engaged at the same time. All headstock shafts are mounted in ball bearings. The power from the main driving pulley is transmitted through an adjustable friction clutch, in which a quick-acting brake for stopping is incorporated. The carriage has a wide bridge and the apron is of the double-plate type. Longitudinal and cross feeds are independent, but are controlled through the same friction.

— 67 —

Lathe, Model B, 13-In.

Pratt & Whitney Co., 111 *Broadway, New York, N. Y.* [Vol.60,p.826.]

This machine is similar to the 16-in., model B lathe made by this company and described on page 342, Vol. 59, of the *American Machinist*. The swing of the lathe is 13½ in. over the bed, and 6- and 7½-ft. bed lengths are furnished. The maximum distances between centers are 32 and 50 in., respectively, for the geared head, and 30 and 48 in. for the cone head. The lathe is designed primarily for motor



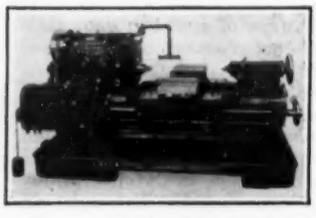
driving, with the motor located in the cabinet leg under the headstock. The motor is belted to the head and drives the machine through a Carlyle-Johnson friction clutch. The geared headstock provides eight changes of speed ranging from 18 to 525 r.p.m. Maag gears are used in the head, the back gears being located below the spindle. The gear box is fitted with a direct-reading index plate and 36 feeds are available.

— 68 —

Lathe, "Duomatic"

Lodge & Shipley Machine Tool Co., Cincinnati, Ohio. [Vol.60,p.864.]

The cycle of operation of this machine is completely automatic, including the location of the lengths and diam-



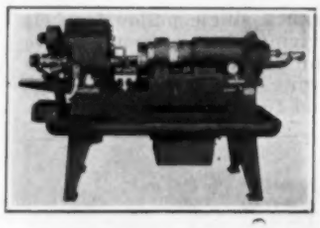
eters on the work piece, these dimensions being obtained through the use of positive metal-to-metal stops. The use of these stops is said to insure a high degree of accuracy. The lathe is dual in character since it has two complete carriages with tool slides, each of which is provided with independent quick forward and return traverse, as well as power feed to both tool carriages and tool slides. This arrangement adapts the machine for a wide variety of work, since both carriages can be used simultaneously in turning operations, or both tool slides can be used for facing. In addition, one carriage with its tool slide can be used in a turning operation while the other is performing a facing and filleting operation. The latter method of setting up the machine is the usual one.

— 69 —

Screw Machine, Automatic, Three-Speed

Cleveland Automatic Machine Co., Cleveland, Ohio. [Vol.60,p.34.]

The automatic screw machines made by this company are now being marketed with a three-speed spindle head. The speeds available include two forward and one reverse speed, obtained through clutches. The clutch levers,



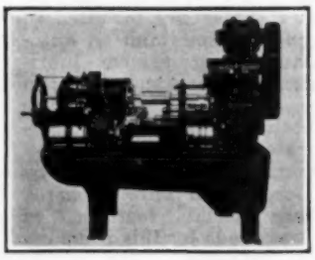
by means of which the changes in speed are automatically made, are controlled by cams carried on a drum on the camshaft, and engage or disengage the proper clutches to bring the various combinations of gearing into action. The three speeds are obtained by the use of a single set of change gears, and the total speed range of the machine is increased by changing the gears. Four sets of change gears are furnished with each machine. The machine is driven through a single belt pulley and a motor drive can be installed, if desired.

— 70 —

Screw Machine, Automatic, Model C, 9/16-In.

National Acme Co., Cleveland, Ohio. [Vol.60,p.190.]

This five-spindle machine incorporates a number of improvements over the former four-spindle model made by this company. The machine has capacity for $\frac{9}{16}$-in. round, $\frac{7}{16}$-in. square, or $\frac{7}{16}$-in. hexagonal bars. The maximum length of feed is 5 in. and the regular turning length is $4\frac{1}{2}$ in. The normal range of production is from 300 to 3,000 pieces per hour. A gear box at the driving end of the machine contains the change gears by which the various speeds and feeds are obtained. The spindle drive shaft passes through the center of the longitudinal tool slide and the spindle



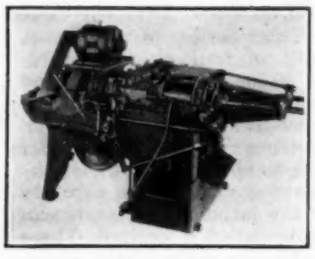
carrier to the spindle gears at the other end of the machine. The camshaft is located below the drive shaft and is driven through change gears in the same gear box. The forming and cut-off slides are mounted on heavy brackets cast integral with the bed. The feed tubes for the stock are supported in a disk at the outer end to prevent whipping at high speeds. Either belt or motor drive can be furnished.

— 71 —

Bar Machine, Automatic, Heavy Duty

Budd-Ranney Engineering Co., 44 East Chestnut St., Columbus, Ohio. [Vol.60,p.192.]

The products particularly adapted for manufacturing operations on this machine are those requiring longitudinal drilling, such as nut blanks, bushings, chain rollers and pipe couplings. Four sizes of the machine can be furnished, of which three are of the double-spindle type, the largest having a single spindle. The maximum capacities range from $1\frac{1}{2}$-in. round bars for the smallest



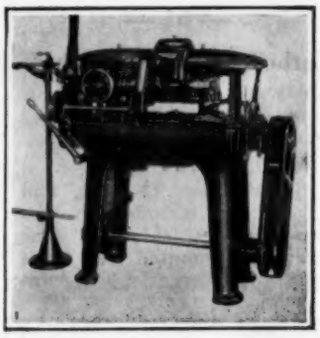
to 4-in. for the largest machine. The machine is motor-driven, the motor being mounted above the headstock which carries the drilling spindles. The stock spindles are located at the other end of the machine in line with the drill spindles, and the forming and cut-off tools are held in pivoted arms. These arms are pivoted to the cover which encloses the cutting chamber and are actuated by rods and cranks from the camshaft below. The stock holding chuck is of the centrifugal type. The forming and cut-off tools perform their operations first but do not sever the piece from the bar. The drilling operation is the last, so that the piece is really drilled off from the bar and then stripped from the drill.

— 72 —

Screw Machine, "Index O"

Arva Stroud, 233 Broadway, New York, N. Y. [Vol.60,p.307.]

This machine is manufactured by Hahn & Kolb, Stuttgart, Germany, and has capacity for mild steel rod up to $\frac{1}{2}$ in. in diameter, and up to $\frac{5}{8}$-in. capacity for brass and soft iron. The work



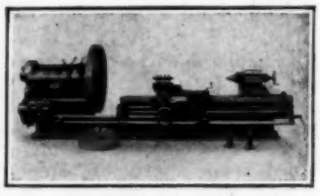
spindle and the threading spindle are located at the top of the machine, the camshaft being mounted directly below and geared to the work spindle. The machine is driven by tight and loose pulleys, a countershaft being belted to the pulley shaft and located between the frame legs. From the countershaft the power is transmitted to the spindles by belts and both spindles are mounted in ball bearings. The stock is fed in the usual manner, a stock-inserting device being provided. Three trunnions carry the cutting tools and a swinging grip that takes the piece just as it is severed from the rod and presents it to a small belt-driven saw for slotting. Both the threading and work spindles rotate in the same direction, the threading action being caused by the higher speed of the threading spindle.

— 73 —

Lathe, Gap, Sliding-Bed, Geared-Head

R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.60,p.789.]

This lathe is built in three sizes with 19-, 25-, and 33-in. swings over the shears, and 38-, 50-, and 60-in. capacities in the gaps, respectively. The headstock provides 16 spindle



speeds in geometric progression, the speeds being selective and obtained by means of two levers. The constant-speed drive pulley runs at 515 r.p.m. and drives the machine through a multiple-disk clutch and brake. The top bed is movable on the lower bed, the movement being obtained by means of a screw of coarse pitch. The upper bed is kept in alignment by a V on the lower sec-

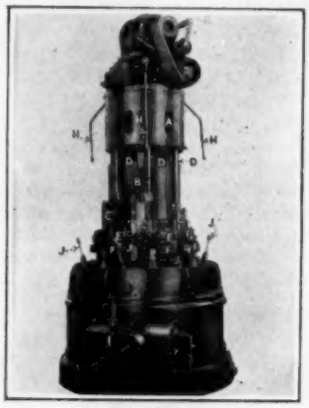
tion and is clamped in position by two heavy clamps. This arrangement allows the position of the upper bed to be adjusted to provide any width of gap and increases the length available between centers. A range of 48 feeds is provided.

— 74 —

"Contin-u-matic," 6-Spindle, 10-In.

Bullard Machine Tool Co., Bridgeport, Conn. [Vol.60.p. 711.]

This machine is similar to the former model built by this company, but has six spindles instead of four. Each spindle and its corresponding tool slides is a com-



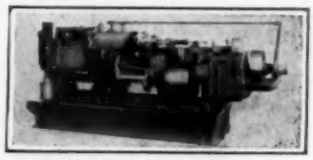
plete unit in which any combined turning and facing operation may be accomplished independently of the remaining units. The central column of the machine is stationary and carries at the top the main cam which is bolted to it. When the machine is in operation the main carrier with all work spindles, tool slides and attached parts is in slow continuous movement around the column. The contour of the main cam determines the movements of all tool slides as well as the relative time of their operation. The machine is driven by a 15-hp. motor mounted at the top of the column. A friction clutch transmits the power and is controlled by a ring that can be moved by means of several handles located around the machine. The work is held in power-operated chucks controlled by handles at each position. The machine illustrated is arranged for machining automobile engine cylinders, a class of work for which it is particularly adapted. It is of massive, rigid construction throughout and weighs 20,080 lb. without the tooling equipment. The diameter of the base is 67 in. and 8x8-ft. floor space is required.

— 75 —

Chucking Machine, "New-Matic"

New Britain Machine Co., New Britain, Conn. [Vol.60, p.861.]

This is a horizontal chucking machine with rotating work spindles and is adapted for facing, forming, drilling and reaming operations on forgings and castings. The stopping and starting of the spindle and the opening and closing of the chuck are controlled by a pneumatic arrangement in order to decrease the loading time. The



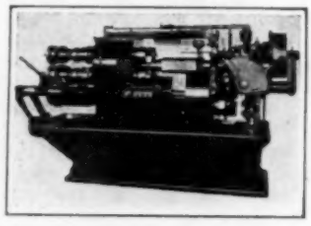
work spindle cylinder is located at the center of the machine and is indexed by a Geneva motion. On the front of the cylinder housing is an air valve that controls the operation of the air cylinder by which the functions mentioned are controlled. The piston of the air cylinder actuates a cam which engages the clutch and spindle operating mechanism. The tool slide is located directly in front of the spindle chucks and is actuated from the camshaft, the cross-slides also being moved by cams through heavy bell cranks. A clutch in the cam mechanism is interlocked with the air valve, so that the indexing and tool movements cannot start until the chuck is closed and the spindle in rotation.

— 76 —

Chucking Machine, Multiple-Spindle, 4½-In., Gridley

National Acme Co., Cleveland, Ohio. [Vol.60,p.867.]

The basic design of the Gridley multiple-spindle bar machine is followed in this chucking machine. The turret arrangement of the former machine is retained and the Geneva indexing motion is used. The important feature of this machine is the



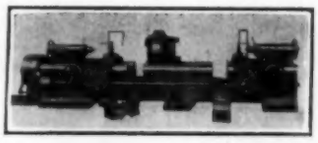
chucking arrangement which is built around the standard air chuck used with the single-spindle chucking machine of this line. The three-jaw type of chuck is most frequently used, the jaws being actuated from a drawbar passing through the center of the spindle. The piston of an air cylinder mounted on the rear end of the spindle is attached to the drawbar. A four-armed spider is attached to the back of the spindle carrier and the air line is attached to the center of it. The valves for the air cylinders on the spindles are located in the ends of the spider arms and are operated in the proper manner from the cam shaft. The machine can be equipped with mechanically-operated chucks, if desired, the spool that operates the chucks being actuated by cams on the rear drum of the machine.

— 77 —

Lathe, Axle, Journal Truing and, Combination

Betts Machine Works of the Consolidated Machine Tool Corp. of America, Wilmington. Del. [Vol.60,p.70.]

The journals of an axle may be turned with the wheels in place on this lathe, as well as the usual axle work. The machine is fitted with two tool carriages for turning outside journals, the center of the axle being held in the driving head. To clear the wheels while this operation is being performed, the bed has two gaps, in which filler blocks may be inserted when the machine is to be used as a regular axle lathe. With the blocks in position the carriages have sufficient travel for turning both the wheel seat and the journal



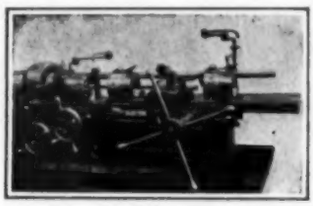
fit, finishing the fillets and burnishing. The driving head is arranged to open so that axles with the wheels in place may be mounted on the centers. The large driving pinion is also made in halves and has a bearing on either side. The feed for the tool carriages is produced through a splined feed rod that runs along the front of the bed and drives the carriages through a train of steel gears. The machine is furnished with a swing of either 45 or 55 in. in the gaps.

— 78 —

Staybolt Machine, Improved

Warner & Swasey Co., Cleveland, Ohio. [Vol.60,p. 677.]

As now equipped, this machine will turn and face the end of the staybolt before the threading operation, thereby relieving the chasers of the necessity of working on rough scale. The forming tool is mounted on the cross slide and prepares the head end of the staybolt for threading. The threading operations are performed by two dieheads on



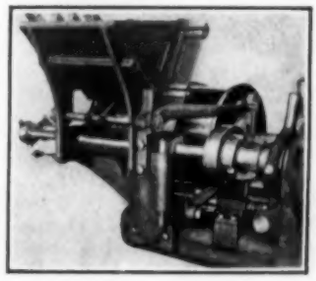
the turret slide, so adjusted that the thread lead is continuous from one end of the piece to the other. The machine is made up of the standard No. 4 turret lathe, to which the necessary attachments for staybolt making are secured. It will handle crown stays, button-head stays and swivel stays up to 40 in. in length and will cut any size thread.

— 79 —

Magazine, Hopper Type, for Cleveland Automatic Screw Machine

Cleveland Automatic Machine Co., Cleveland, Ohio, [Vol.60,p.156.]

The gravity-feed, vertical-type magazines recently furnished with the Model B plain automatic screw machines made by this company have been changed to a hopper style. This change has been made in order to handle efficiently a greater number of parts and allow the operator a greater length of time to fill it. The agitator racks are oscillated by a cam and lever arrangement, the oscillating movement of the racks preventing the clog-



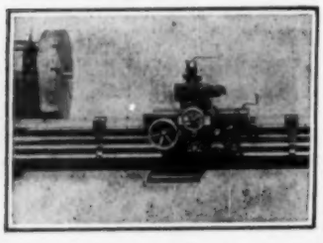
ging of the pieces in the lower opening of the hopper. The guide tube bushing is located directly under the hopper opening, and places the end of the piece in the chuck after it is received from the hopper. The pieces remaining in the hopper are held back until the piece in the bushing is in the chuck and the guide tube back in position below the hopper. The hopper has capacity for from 200 to 600 pieces, depending on the diameter of the stock.

— 80 —

Lead Screw Supports, Self-Spacing

R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.60,p.751.]

Self-spacing lead screw supports are now being supplied on all LeBlond lathes with a swing of 25 in. or over. The carriage in its



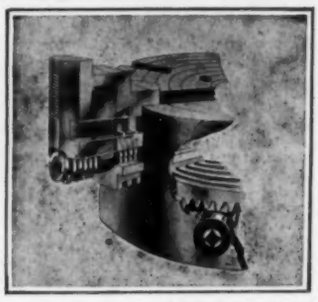
travel along the bed automatically engages such supports as it may come in contact with, carries them to the end of its travel and, upon return, releases them in their respective original positions. Each support is provided with a spring-controlled hook pawl that engages a locking stud on the carriage. The pawl and the locking stud furnish a positive connection between the supports and the carriage that will stay in engagement until released. Each pawl carries a release pin arranged to contact with a pin located in the bed at the release position.

— 81 —

Chuck, "Triplex"

Cushman Chuck Co., Hartford, Conn. [Vol.60,p.821.]

This chuck has both universal and independent movements for the jaws and is furnished in three- and four-jaw types. The diameters range from 9 to 15 in. At the base of each jaw is located a hardened screw equipped with thrust bearings. These screws mesh with the racks beneath them and the lower surfaces of the racks engage the scroll. When the scroll is rotated by its pinion the



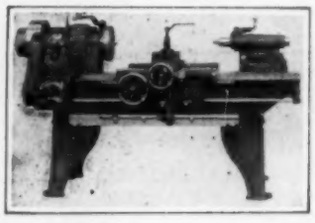
racks are carried in or out concentrically. To obtain independent action of any jaw it is only necessary to turn the screw for that jaw. All jaws may be easily brought to a concentric position by means of the screws, and can then be operated universally by the scroll. The body of the chuck is a one-piece casting and the jaws are of steel, hardened and ground to standard gages.

— 82 —

Rapid Traverse for 17-In. Rapid Production Lathe

R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.60,p.902.]

This mechanism is simple in its operation, since both feed and traverse are controlled by a single lever. The lever is mounted on the carriage at the right of the cross-feed handle and its movement in the horizontal plane engages and disengages the feed. Movement in the vertical plane controls the traverse in both directions. The driving mechanism for the traverse consists of a housing bolted to the back of the carriage through which passes a right- and left-hand traverse screw of coarse pitch. Two nuts are carried



in the housing, one being arranged to engage the right-and the other the left-hand screw. The screw is revolved at constant speed through a belt and reduction gearing from the drive pulley of the machine. The rate of traverse is uniform at 150 in. per min. An automatic traverse stop is provided at the tailstock and, in conjunction with the automatic apron stop for the feed, gives an automatic stop in both directions.

— 83 —

Chuck, Quick-Acting, Wrenchless

Thomas Elevator Co., Hoyne Ave. and Monroe St., Chicago, Ill. [Vol.60,p.980.]

This device supplements the Barker wrenchless chuck made by this company for some time. It is said that this chuck incorporates features that tend to give it remarkable ease in operation on the heaviest kind of chucking. One of the advantages of the device for multiple production work on pieces of uniform outline is the fact that it is not necessary to stop the rotation when chucking or ejecting the piece. The mechanism of chuck is equipped for Alemite lubrication.

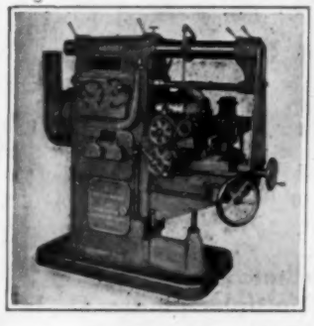
Milling Machines

— 84 —

Milling Machine, Geared-Head, No. 2G

Hendey Machine Co., Torrington, Conn. [Vol.60,p.69.]

This machine has a single-pulley drive and is fitted with a clutch for starting and stopping. The spindle has the same type of construction as the Hendey lathe, has a through hole 1 in. in diameter, and is bored at the front end to a No. 11 B&S taper. There are 18 spindle speeds, ranging from 15 to 355 r.p.m. and controlled by two levers. The feed gear train is constructed as a unit and may be lifted out of the machine entire, after loosening the holding screws from the



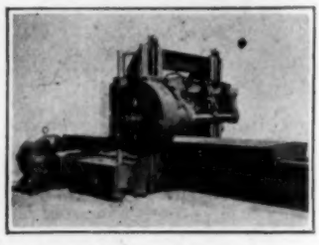
cover. This train provides 16 changes of feed, ranging from 0.04 to 20 in. per min. The feeds are independent of the spindle drive both as to direction and rate of advance. Rapid power traverse for the work is available at all times in either direction and is independent of the feeds. A separate pump supplies cutting compound for the tools from a tank located in the bottom of the column. The working surface of the table is 48x12 in.; the longitudinal feed is 28 in.; the cross feed is 10 in.; and the vertical feed 18 inches. The over-all floor space required by the machine is 99x112 in., and its net weight is approximately 4,500 pounds.

— 85 —

Milling Machine, Rod, Locomotive, 58-In.

Niles - Bement - Pond Co., 111 Broadway, New York, N. Y. [Vol.60,p.195.]

This heavy-duty, planer-type milling machine has a distance between centers of 58 in. The 75-hp.. driving motor is geared to the cutter spindle through a massive mechanism that incorporates a large manganese bronze wormwheel engaging a hard-



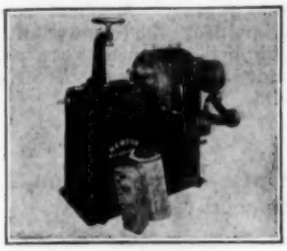
ened steel worm. The large diameter of the wormwheel together with the tangent type of gearing gives the smoothness and steadiness of action so necessary for eliminating chatter and preserving the edges of the cutter. The drive for direct current consists of a variable-speed motor with the range of speed required by the cutters, so that change gears are not needed. The table has power feed and rapid power traverse and the cross-rail also has rapid power adjustment. Both the power feed and traverse are driven by the same motor. The over-all width of the table is 54 in., the length of the table is 16 ft., and a maximum distance of 32 in. is available between the table and the center of the cutter arbor. It is stated that one of these machines, installed in a large locomotive manufacturing plant, is able to withstand in all of its parts the heaviest possible cuts. The best cutters available are used and the machine is said to operate under these conditions without chatter.

— 86 —

Milling Machine, Radius, Planetary Type

Newton Machine Tool Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. [Vol.60,p.489.]

This machine is designed for milling the end of automobile crank cases and is equipped with two spindles,



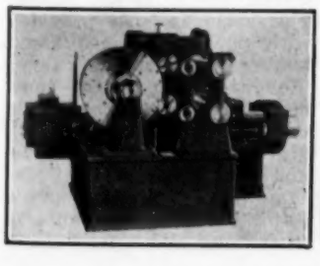
one of which carries the roughing cutter and the other the finishing cutter. Both spindles are mounted in a drum in which they are adjustable radialy, and are driven by spur gears from the driving shaft. The drum rotates, being driven by a worm and wormwheel, the rotation producing the feed of the cutters. A hardened steel dog trips the driving mechanism of the drum after the cycle of the cutters is completed. The work-holding fixture is fitted with taper gibs and can be adjusted longitudinally by means of a micrometer screw. The work is located on a bar that fits into the crankshaft bearings and rests on hardened plates. It is held down by a screw clamp at the top.

— 87 —

Milling Machine, Production, Double-Spindle, Sundstrand

Rockford Milling Machine Co., Rockford, Ill. [Vol.60,p. 701.]

In its essentials this machine consists of a work-holding turret on a horizontal shaft and a sliding spindle head, both mounted on a substantial, strongly-ribbed base. There are two spindles and the action of the cutters



on the work is controlled by various combinations of the rotation of the turret and the motion of the spindle head, so that the machine is not a single-purpose tool but is available for a wide variety of work. The spindle head is fed along the bed by a large feed screw and its maximum travel is 10 in.

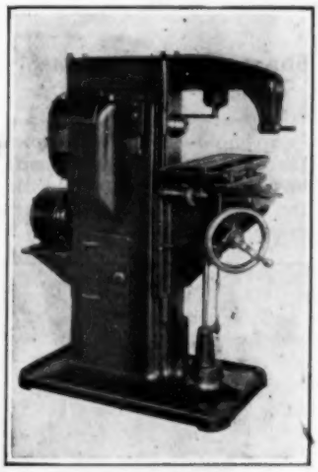
The spindles are 11 in. apart on centers and are driven through gearing in the head, eleven changes of spindle speed being available. The shafts in the head are hardened and run in roller bearings. The turret revolves on a heavy stationary shaft that is rigidly supported at both ends. A circular turret is shown in the illustration but other shapes can be furnished if desired. The shape of the turret depends entirely on the work for which the machine is to be used, and each turret is designed especially to suit the conditions. The working surface of the octagonal turret is 8½x13 in. and two T-slots ⅝ in. wide are provided on each flat face. The mechanism for obtaining the combination of speed and feed desired is located at the left, as is also the lever for operating the friction driving clutch. The machine may be either belt- or motor-driven.

— 88 —

Milling Machine, Hand, Production, 5-In.

Pratt & Whitney Co., 111 *Broadway, New York, N. Y.* [Vol.60,p.523.]

All gearing and movable parts of this machine are en-



closed in the vertical column. Transposing slip gears are used for changing the spindle speeds. A ⅝-in. hole for a draw-back rod is provided through the spindle, the nose having a No. 9 B&S taper hole to fit standard arbors. Maag gears are used for the spindle speed change gears. The overhanging arm is a ribbed casting and the outboard suport fits into a slot on the under side of the arm. The arm is attached to the column by four bolts and a cover for the top of the column is furnished when the arm is not desired. The working surface of the table is 5x17 in. with a ⅝-in. slot, the total longitudinal travel being 12 in. The travel is obtained through a lever pinion and rack, the vertical adjustment being made by means of a handwheel. The cross slide is operated by a crank fitted with a micrometer dial. The machine is particularly designed for motor drive but a single-pulley belt drive can be furnished.

— 89 —

Table Attachment, Semi-Automatic

Brown & Sharpe Mfg. Co., Providence, R. I. [Vol.60,p. 306.]

This device converts the No. OY plain milling machine

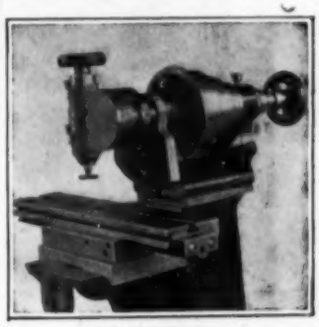
made by this company into a semi - automatic machine, adapting it for rapid production work. The table feed crank is replaced by a pulley, about which is wrapped a web belt extending down to a treadle. By depressing the treadle the table is moved to the cutting position where the feed is engaged, and this operation also compresses a heavy spring. Upon the completion of the cut a trip dog disengages the cutting feed and the spring automatically returns the table to the loading position. If the loading time is shorter than the cutting time, the automatic table return permits the running of more than one machine by one operator. It is stated that the attachment has increased production more than 20 per cent on some jobs.

— 90 —

Milling Attachment, Vertical

Stark Tool Co., Waltham, Mass. [Vol.60,p.563.]

This attachment has a maximum capacity of ⅝ in. and is for use on the bench lathes and milling machines made by this company. It is arranged to be clamped directly to the headstock of the lathe or milling machine, and may be swung 15 deg. either side of the vertical position. The spindle is fitted with a draw-in device which will accommodate Stark No. 3 collets, taper collets and



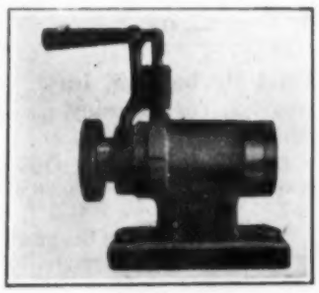
cutter arbors. The spindle is driven through helical gears at twice the speed of the machine spindle.

— 91 —

Milling Fixture

E. W. Bemis Machine Co., Worcester, Mass. [Vol.60,p. 639.]

This device is designed for holding round stock for slabbing or milling operations and consists of a heavy cast-iron body in which is mounted a spindle. The spindle is threaded to hold collets from ½ to ¾ in. in size, the collet being closed by a knurled handwheel. The rotation of the handwheel draws



the collet back into a hardened ring. The spindle may be locked in any one of three positions by a locking pin arranged to enter notches in the body of the device. The pin is withdrawn by a convenient handle.

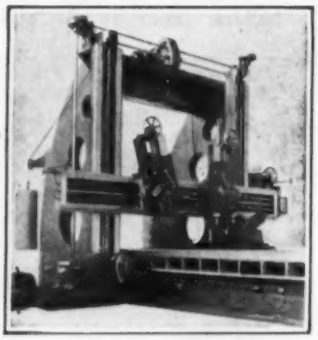
Planers, Shapers and Slotters

— 92 —

Planer, Heavy Duty, Large

Betts Machine Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. [Vol.60,p.676.]

This exceptionally large machine was built especially for planing slots in large rotor castings. The planer capacity is 120 in. wide by 120 in. high, and the planing



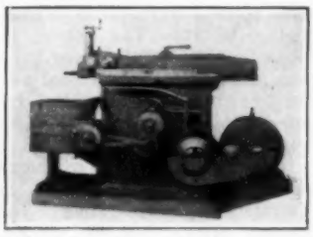
length is 30 ft. A large reversing planer motor is furnished for driving, and all driving gears are of steel. The table is a double-plate casting and has guides on the bottom to prevent shifting under heavy side cuts. The uprights are secured to the bed by tongues and grooves and bolts, the cross rail being carried back between the uprights for additional stiffness. The cross-rail heads are of a special design that permits working the heads close together. The side heads are provided with a knee support to give rigidity. Power feed and rapid traverse is available for all four heads, a motor on top of the machine being installed for this purpose and also for raising and lowering the rail.

— 93 —

Feed Mechanism, Improved, for Hendey Shapers

Hendey Machine Co., Torrington, Conn. [Vol.60,p. 157.]

In this mechanism the pawl is not connected directly to the crank pin from which it derives its movement, but is actuated by a swinging sector, the amplitude of the movement of the sector remaining constant regardless of whether the pawl is giving the maximum or minimum feed. The number of teeth that the pawl is allowed to engage is determined by an annular cam, the position of which is under the control of the operator. The action of the feed pawl is always in one direction and to reverse the motion a small lever is



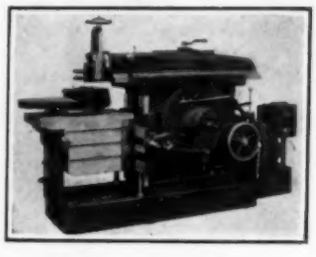
thrown over. The amount of feed is adjustable in increments of 0.005 in. from 0.005 to 0.175 in. and is easily set by means of a graduated sector.

— 94 —

Shaper, Crank, Heavy-Duty, 32-In.

Stockbridge Machine Co., Worcester, Mass. [Vol.60,p. 787.]

A feature of the mechanism of this machine that secures additional rigidity is the provision of an outer ring bearing on the side of



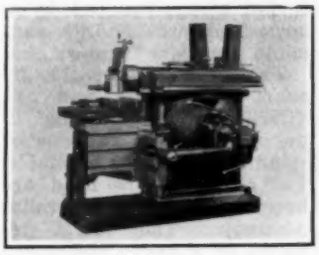
the bull gear opposite the hub bearing. This outer bearing eliminates the usual overhang of the bull gear. The box-section ram can be positioned and the length of the stroke can be adjusted without stopping the machine. Eight ram speeds are ava l-able, ranging from 6 to 92 strokes per min., and are obtained through a gear box and a set of back gears. The ram head has a graduated swivel and power down-feed can be furnished, if desired. The total feed of the tool slide is 10 in. The cross-rail is elevated by two screws through a distance of 15 in. and an outer support for the table is provided. The cross feed operates only on the return stroke of the ram and any length of feed up to $\frac{5}{8}$ in. is available.

— 95 —

Shaper, Toolroom

Cincinnati Shaper Co., Cincinnati, Ohio. [Vol.60,p.828.]

This shaper is especially adapted for toolroom work



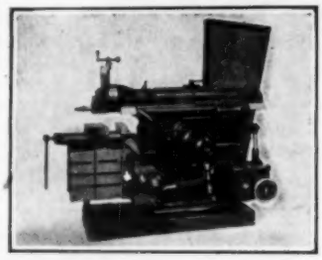
and is, in its essential power and control elements, similar to the Climax shaper made by this company and described on page 893, Vol. 59, of the *American Machinist*. The important feature of the machine is the universal swivelling table with which it is equipped. This table is arranged to swivel around a heavy trunnion, cast on the apron and extending throughout the whole length of the table. Worm gearing operated by a hand crank swivels the table to any desired position. One face is solid, the other being a rocking top, set well into the body of the table and pivoting on an axis at right angles to the trunnion. The tilting face is also controlled by a crank and worm gearing, the maximum angle of tilt being 15 deg. above and below the horizontal. No outer support for the table is provided, but the table is of unusually heavy construction.

— 96 —

Shaper Improvements

Gould & Eberhardt, Newark, N. J. [Vol.60,p.901.]

A number of additional features and improvements have been incorporated in the entire line of shapers made by this company. A



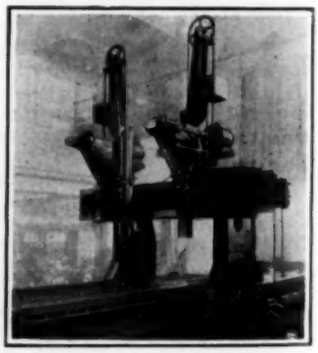
multiple gravity oiling system is provided to automatically lubricate all of the main internal bearings. This system permits the operator to turn the oil on or off as required, depending upon how hard the shaper is being run. The lever for shifting the gears in the speed gear case has been moved from the bottom to the top of the case. An index plate by which the number of strokes per min. can be read is provided. The starting and stopping lever has been made longer. The movable vise jaw is made with a solid machined top which provides more surface for gaging. A sheet-metal guard for the cross rail is supplied and means are provided for oiling the cross slide.

— 97 —

Slotter, Planer Type, Special

Betts Machine Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. [Vol.60,p. 790.]

The bed and table of this machine are of the conventional planer design, the table being carried by one V and one flat track. Two heavy uprights are fastened to the base and carry a fixed cross rail on which two saddles that carry the slotting rams are mounted. Provision for slotting at an angle is made by mounting the rams so that they face each other. Each saddle is swivelled by a worm and segment. Each ram is driven by a 20-hp. reversing planer type motor, the motor being carried on the saddle and driving through an angular shaft, worm gearing and a rack.



The saddles have power feed and rapid traverse along the rail, the power being furnished by a 15-hp. motor. The table is also provided with power feed and rapid traverse movements along the bed driven by the same motor that moves the saddle on the rail. An interlock prevents engagement of table and saddle motions at the same time. The rams have a 48-in. stroke. The table is 30 ft. long and 9 ft. wide.

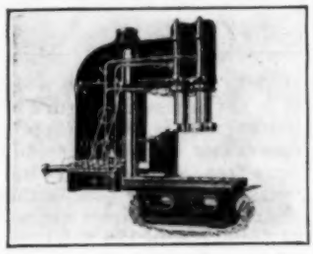
Presses

— 98 —

Press, Flanging, Hydraulic

Watson-Stillman Co., 50 *Church St., New York, N. Y.* [Vol.60,p.226.]

This machine is adapted to the flanging of plates and is of the built-up type, the main frame being made of sections securely bolted to-



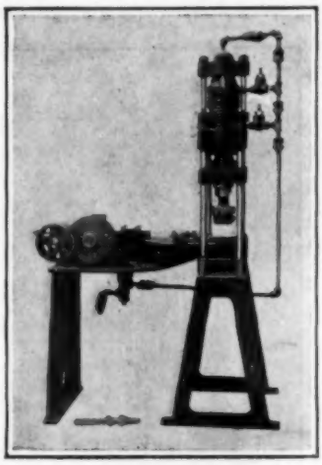
gether. The tension strains are taken by two heavy columns or bolts which hold the two parts of the frame together and take most of the vertical ram thrust. The draw-back cylinders for the return stroke of the ram are located below the top of the frame, reducing the over-all height of the machine and permitting the mounting of a swing crane on top of the press. The press is usually fitted with two vertical upper rams, one vertical lower ram, and one horizontal ram. The machine is built in four sizes with total pressures on the vertical cylinders of 150, 200 and 300 tons, respectively.

— 99 —

Press, Marking and Stamping, Multi-Pressure

Charles F. Elmes Engineering Co., Morgan and Fulton Sts., Chicago, Ill. [Vol. 60,p.452.]

This press is of the hydraulic type so that it is possible to obtain uniform impressions, regardless of variations in the thickness of the work or the length of stroke of the marking die. It is used to stamp names, trademarks and graduations on a variety of work. The press is equipped with three superimposed single-acting cylinders which can be used separately or combined to provide seven pressure combinations, when operated from a single pressure accumulator. Hydraulic operation of the press is controlled by an automatic valve. Feeding and ejecting the pieces to be marked is



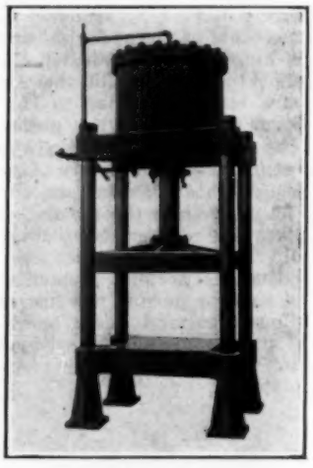
also automatic. The press stroke and the feeding mechanism are arranged to accommodate pieces varying in shape and size and can be quickly adjusted. The press can be built in any desired capacity.

— 100 —

Press, Hydraulic

H. Edsil Barr, Erie, Pa. [Vol.60,p.563.]

This press is designed to handle a wide range of work, particularly where a fast-



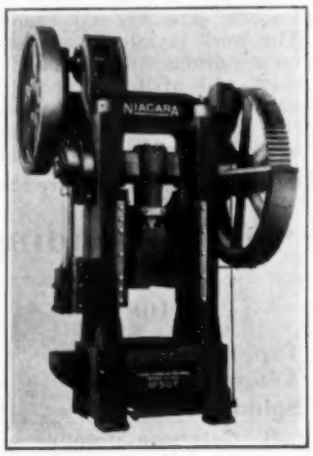
moving press of moderate tonnage is desired. The working cylinder is 24 in. in diameter with a 12-in. stroke, and is designed for a maximum working pressure of 200 lb., per sq.in., giving a total pressure of 45 tons. The working space is 30 in. wide between the columns and 30 in. high between the platens when the piston is up. The cylinder has tapped holes for 1¼-in. pipe, so that it will be quickly filled with water for fast operations at short strokes. The piston may be operated up and down in the cylinder by means of the ordinary shop water supply, high-pressure water being admitted through a three-way valve when the platen is down on the work.

— 101 —

Press, Trimming, No. 510-T

Niagara Machine & Tool Works, 637 *Northland Ave., Buffalo, N. Y.* [Vol.60,p. 485.]

This press is of the single-crank, straight-sided type, and is provided with an outer slide for trimming work. The frame consists of a bed, two uprights and a crown, bolted together and tied by four steel rods shrunk into place. The driving mechanism is mounted on top of the machine, where it will be out of the way of the operator and



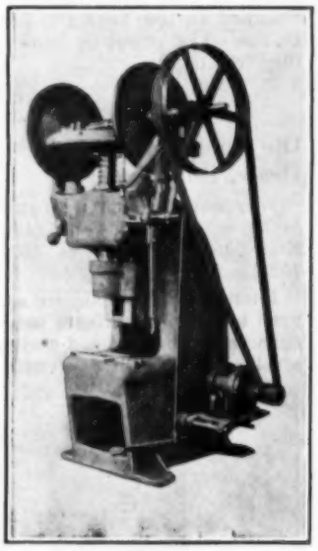
the bearings will be protected from scale and dirt. A jaw clutch controls the press action. A recess in the slide is provided for holding the dies and the surface of the slide is increased by flanges that extend to the front and back. The standard stroke of the slide is 6 in. and a 4-in. adjustment is provided. The outer trimming slide is actuated by an eccentric on the crankshaft. The press illustrated is arranged for individual motor drive.

— 102 —

Press, Power, Percussion, No. 2-8½

Zeh & Hahnemann Co., Newark, N. J. [Vol.60,p. 527.]

This press has an open throat or gap so that long work may be inserted under the ram, projecting either at the sides or from front to back. The frame of the press is made from a steel casting so that it will withstand the unusual strains. The driving mechanism is the same as that used on other models of this press, and consists of two friction disks driving a flywheel attached to the upper end of the ram screw. One disk drives the ram downward, the engagement of the other with the flywheel giving an upward movement. The friction drive accelerates the flywheel gradually and all the energy of the rapidly moving wheel is utilized as the ram meets



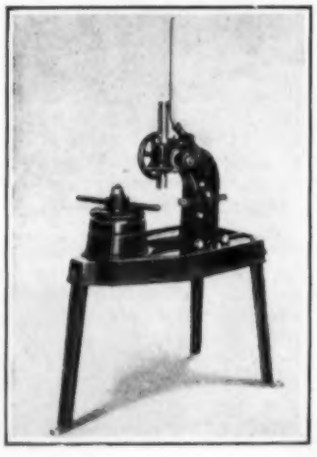
the work and brings the wheel to a dead stop. Emergency stops and safety devices are provided. The press illustrated is equipped with a constant-speed motor belted to the friction drive shaft.

— 103 —

Straightening Machine, Disk Wheel, Prossen

Nilson-Miller Corp., Hoboken, N. J. [Vol.60,p.714.]

This machine is designed for straightening wheels that have been bent in service and is especially adapted for use in garages and repair



shops. A turret for holding the wheel is mounted on a base and carries a stud that centers a flanged sleeve on which the wheel hub fits. The wheel is fastened to the sleeve by a large wing nut, the lower flange of the sleeve resting on a ball bearing, so that the wheel can be easily revolved. The frame of the machine guides a vertical ram, operated like the ram of an ordinary arbor press, and a horizontal jack is also provided for straightening a damaged rim. The frame is clamped to the base and can be moved in or out by loosening two nuts.

— 104 —

Die Cushions, Double-Draw, Pneumatic

Marquette Tool & Manufacturing Co., 319 West Ohio St., Chicago, Ill. [Vol.60,p. 152.]

Pneumatic die cushions are used to provide uniform pressure throughout the drawing stroke, obviating the variation in pressure occasioned by the use of springs or rubbers. The double-draw cushions also make it possible to perform two operations at one stroke of the press. The type G cushion, Fig. 1, is designed for use on single-acting presses, and permits draw and redraw operations at a single stroke, using special dies. The type H double-draw cushion, Fig. 2, is for use with a double-action press and will make the first draw and the first redraw at one stroke of the press. These cushions are easily attached to any press and are designed to accommodate the work for which they are to be used.

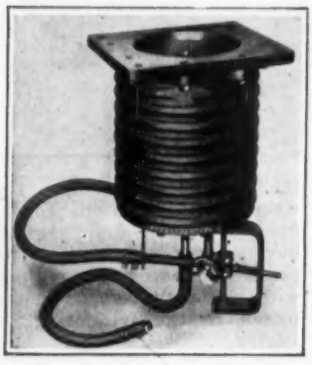


Fig. 1—Type G cushion

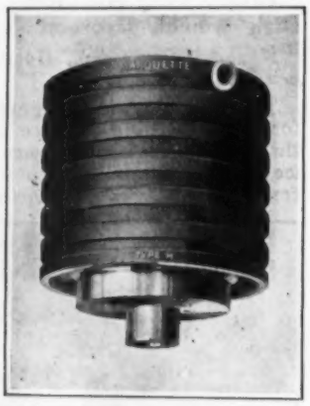


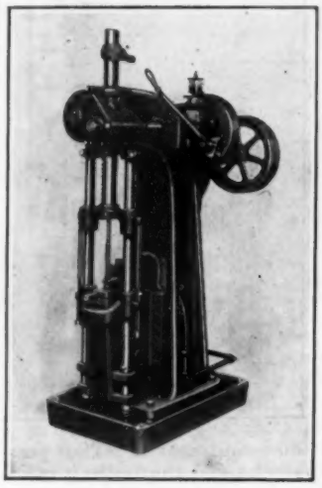
Fig. 2—Type H cushion

— 105 —

Broaching Fixture, Sub-Press

Hercules Manufacturing Co., 446 East Woodbridge St., Detroit, Mich. [Vol.60, p.674.]

This fixture is to be used in conjunction with the 15-ton broaching press made by this company and is especially adapted for correcting a rough-drilled hole by broaching, so that it will be smooth, straight and round. The work is held in position on a suitable fixture and the pilot end of the broach is passed through the hole into the guide bushing in the lower guide, so that the broach is supported at both ends as the operation is performed. As the pressure is applied, the upper guide moves downward and pushes the broach through the work. When the broach has passed through the work, the power feed is automatically thrown out and, as the ram returns, the lower guide is lifted back to the loading position by check nuts on the feed rods.



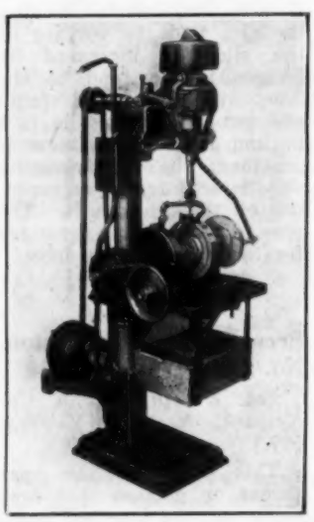
Threading Machines

— 106 —

Tapping Machine, Automatic, Single-Spindle

W. Gaterman Manufacturing Co., Manitowoc, Wis. [Vol.60,p.151.]

This machine consists of the pneumatic oscillating tapping machine previously described on page 496, Vol. 59, of the *American Machinist*, fitted with an attachment for automatic operation. A rotating fixture is attached to the table of the machine and is automatically indexed, the chucking portions of the fixture being machined to conform to shape of the pieces. The spindle feeds down and returns automatically and the operator has only to load the pieces into the fixture, s they are ejected automatically. The pneumatic oscillating feature of the machine is said to permit the use of plug taps and their operation at high speeds without danger of breaking or stripping the threads.

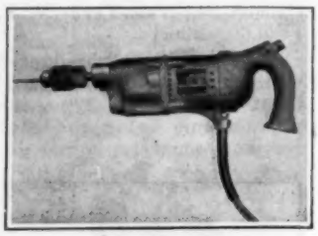


— 107 —

Tapping Machine, Reversible, Thor

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago, Ill. [Vol.60, p.522.]

This portable machine is for use in tapping holes up to $\frac{5}{8}$ in. in diameter and for retapping larger sizes up to $\frac{7}{8}$ in. The motor used is the same as that furnished in the standard Thor electric drill but the speed is reduced by gearing. The reverse is mechanical, thus eliminating the sudden shocks to the armature which would occur if it were reversed with the spindle. A clutch engages and rotates the spindle to the right when pressure is exerted on the tool. The spindle can be reversed and the tap backed out at any point by pulling the machine slightly away from the work. It is not necessary to turn off the current between tapping operations since the spindle runs free. The motor is universal, running on either alternating or direct current at from 110 to 120 volts.

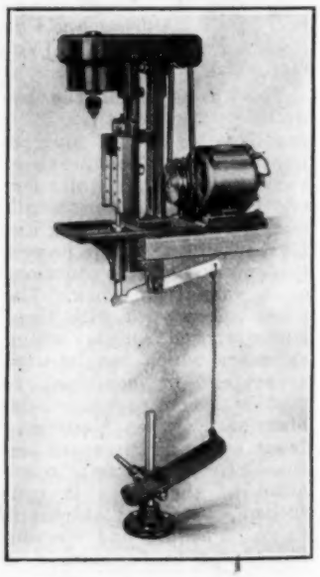


— 108 —

Tapping Machine, Vertical

Bicknell-Thomas Co., Greenfield, Mass. [Vol. 60,p.674.]

This high-speed tapping machine is designated No. 11M and is driven by a $\frac{1}{3}$-hp. motor. It has a tapping capacity of $\frac{1}{4}$ in. in cast iron or brass and $\frac{1}{16}$ in. in steel. Two tapping speeds are provided, 600 and 1,000 r.p.m. The driving mechanism has a hardened cone clutch mounted on the spindle, furnishing a drive that is very sensitive. When the tap has entered to the desired depth, the spindle automatically reverses at twice the entering speed. The vertical table slides on steel balls and has a T-slot and six tapped holes for locating and fastening jigs or



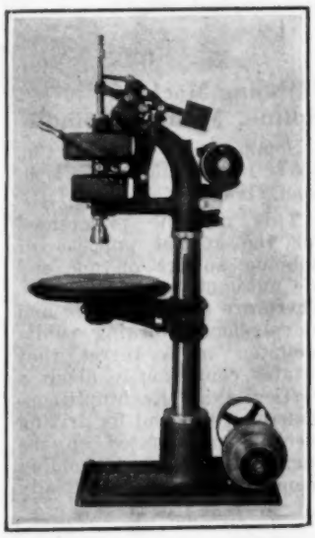
special work-holding fixtures. The table is operated by a lever and treadle, leaving both of the operator's hands free to handle the work. The machine requires an 8x14-in. space on the bench and its weight is approximately 70 pounds.

— 109 —

Tapping Machine, Automatic, Roller-Bearing

Garvin Machine Co., Spring and Varick Sts., New York, N. Y. [Vol.60,p.829.]

The addition of roller bearings to this machine not only decreases the power necessary to drive it, but also provides a more accurate and durable mounting



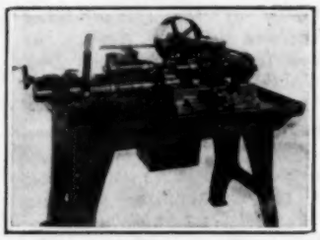
for the spindle. The driving pulley is supported by roller bearings on a stationary bushing held in the frame bearing. The stationary bushing provides a long accurate bearing for the spindle, and one that is not affected by the tension of the belt. Each driving pulley is fitted with two taper roller bearings so that the thrust of the friction clutch is taken on the rollers and the former thrust bearing is not required. The stationary bushings on which the pulleys are mounted are arranged so that they can be moved vertically in the frame by an adjusting screw to take up the wear of the clutch.

— 110 —

Thread Milling Machine, Pipe Tap

O. S. Bickford & Son Co., 243 Silver St., Greenfield, Mass. [Vol.60,p.825.]

This machine threads the tap completely at one revolution of the tap and produces a relieved thread. It is an improved model of the machine manufactured by this



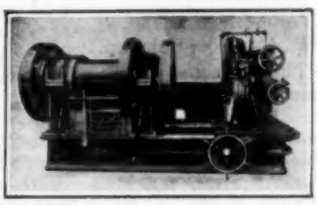
company for some time. The blank is mounted between centers in brackets mounted on a heavy longitudinal bar, the tail center bracket having an arm that rides a relief cam and moves the blank in and out from the cutter to produce the relief on the thread. The camshaft also carries a lead screw that engages half nuts on the main bar, moving the work forward past the cutter and giving the proper lead to the thread. The main spindle for the cutter is driven by worm gearing from the driving shaft of the machine. The machine can also be used to mill its own cutters by disengaging the half nuts from the lead screw.

— 111 —

Threading and Cutting Machine, Pipe, 20-In.

Landis Machine Co., Waynesboro, Pa. [Vol.60,p. 230.]

This size is an addition to the line of such machines made by this company, and its range is from 10 to 20 in., the entire range being covered by one diehead and one set of chasers. The machine has a single-pulley drive and the eight speeds



are obtained by means of a speed box located below the main spindle. A friction clutch is mounted on the drive shaft, the operating cone of the clutch being moved by two levers located at the ends of the headstock. The forward lever is used for starting and stopping when making up flanges, and the middle lever is for reversing. At each end of the hollow spindle there is an independent three-jaw chuck for holding the pipe. The rear chuck is also equipped with flange grips for holding flanges. The diehead carriage is moved either by power or by hand. Automatic stops are provided. The machine is converted for motor drive by replacing the pulley with a sprocket and mounting the motor on a base over the gear box. The motor drives the machine through a silent chain.

— 112 —

Threading Machine, Pipe, Portable

Williams Tool Corp., 12th and Liberty Sts., Erie, Pa. [Vol.60,p.673.]

This small portable machine can be used to cut threads on from ¼- to 2-in. pipe, and bolts up to 1¼ in.

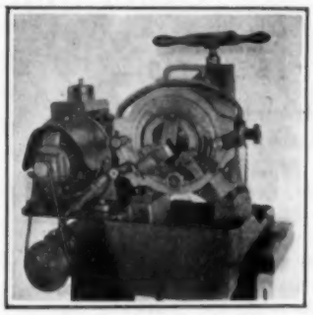
in diameter. The machine is driven by belt from a motor in the base, the drive shaft being connected to the spindle by sliding change gears which provide two speeds and a neutral position. The motor mounting allows the motor to be raised by a crank to stop the machine. The spindle is mounted in babbitted bearings in the headstock and carries a three-jaw universal chuck at its forward end for driving the pipe. A centering chuck for holding long pieces of pipe is mounted at the rear end of the machine and is adjusted by a handwheel. The diehead and carriage are cast in one piece and slide on tubular ways, being moved by a rack and pinion. The dies are interchangeable and operated by a cam and lever. The machine can be easily knocked down to make it easier to move. The cut-off and reaming attachment is fastened to the back of the diehead and is operated by a screw and handwheel. Four sets of dies are furnished.

— 113 —

Cutting and Threading Machine, Pipe, Portable, Forbes

Curtis & Curtis Co., 900 Railroad Ave., Bridgeport, Conn. [Vol.60,p.827.]

This machine is self-contained and motor-driven, its weight being such that it can be transported to the work. The feature of the machine is the stationary



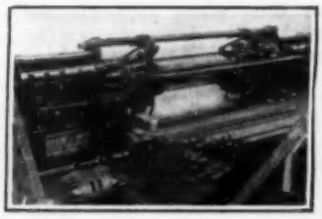
vise used to hold the pipe so that the heavy pipe is not revolved during the threading operation. The dies move around the stationary pipe. Since the pipe remains stationary it is also possible to thread scrap or bent pipe, the only requirement being the presence of 8 in. of straight pipe on the end to go through the vise. The power is delivered from the motor through suitable reduction gearing. The dies are adjustable and fitted with a release that can be set to open them at any predetermined point. The machine is made in two sizes with a total range from ¼- to 4-in. pipe.

— 114 —

Threading Machine, Pipe, "Roto-Matic," Davis

Wm. K. Stamets, Jenkins Arcade, Pittsburgh, Pa. [Vol. 60,p.979.]

This machine is built in two sizes and is adapted for the threading of electrical conduit. The No. 2 machine will thread pipe from ½- to 2-in. nominal diameter, the No. 3 from 1½- to 4-in. pipe. The double-end machine illustrated will handle standard conduit in 10-ft. lengths,



and for random lengths two single-end machines are required. A six-station work spindle rotates in synchronism with two six-spindle tool drums, one at either end of the machine. The pipe is fed to the machine through a suitable hopper and the finished work drops on inclined ways at the other side of the machine. Six special self-opening dieheads are mounted on the cutter spindles of each drum, each diehead sliding on its spindle and backed by coil springs. The dies thread themselves on the work and a tool inside the diehead chamfers the inside of the pipe. The two-jaw chucks are allowed to float slightly to permit bent work to be aligned.

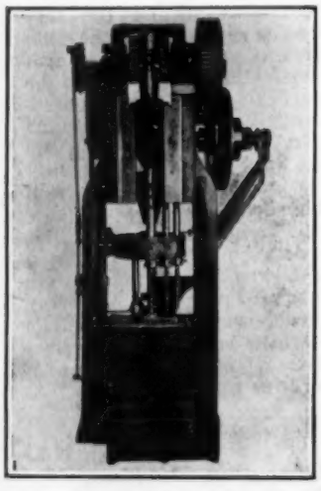
Other Machine Tools

—115—

Broaching Machine, Automatic

Myers Machine Tool Co., Mt. Clemens, Mich. [Vol.60, p.823.]

The feature of this machine is the use of several broaches which are passed through the work in succession and automatically returned to their working position in the head. A crank-



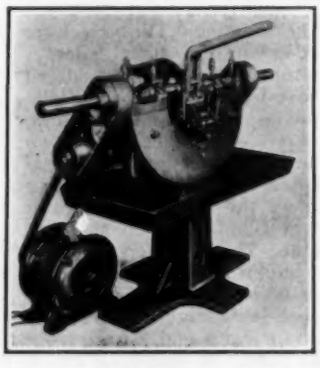
operated ram is mounted at the top of the frame. The broaches are carried in spindles mounted in a turret that revolves on a vertical shaft at the center of the machine, and are automatically presented below the ram to be pushed downward as the ram resends. A drum below the work table is mounted on the same shaft and indexes with the turret. This drum carries a series of receiving collets arranged to receive the broaches as they come through the work. The drum carries the used broaches to the back of the machine where a sliding rod raises them to the spindle which grips them and automatically rises to the working position in line with the ram. The machine illustrated carries 12 12-in. broaches and three other sizes of the machine can be furnished.

—116—

Chamfering Machine, Double-End

Grant Manufacturing & Machine Co., 85 Silliman Ave., Bridgeport, Conn. [Vol. 60,p.639.]

Round stock in all sizes up to 2 in. in diameter and 7 in. long can be handled by this machine. The cutter heads are designed to take cutters of standard tool stock that may be shaped to produce bevels or chamfers of any depth and included angle desired, or for rounding and facing both ends of the stock simultaneously. The spindles are driven from a motor through a suitable combination of shafts and belts. The feeding mecha-



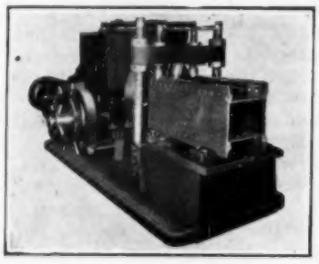
nism derives its motion through worm gearing and the rate of operation may be varied by means of change gears. The same mechanism that operates the work carrier also actuates the cams for the endwise movement of the spindles. During a complete cycle the machine picks up a piece from the bottom of the feed rack, carries it into line with the spindles, grips it while the machining operation is being performed, and discharges the finished piece through a chute into a suitable receptacle.

—117—

Facing Machine, Column, Heavy-Duty

Newton Machine Tool Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. [Vol.60,p.830.]

This machine is for facing the ends of columns, girders and beams rapidly and accurately and is a modification of the rail-ending machine previously manufactured by this company. It has sufficient capacity for I-beam sections up to 27 in. deep and H-columns up to the 22-in. size. The work is held in a screw clamp as illustrated or an



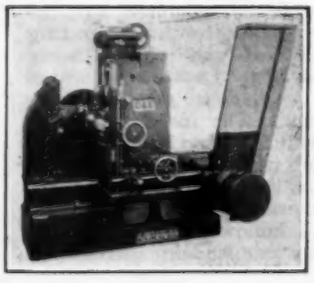
air-operated clamp can be furnished. The cast-steel cutter head is 31½ in. in diameter over the cutting tools. The table and base are cast in one piece, oil and chip pans being provided at the sides. The spindle has a 2-in. traverse actuated through a stationary screw and a revolving nut. The feed and the power return are both controlled by the same lever at the side of the machine, and the position of the spindle can be adjusted by a large hand-operated pilot wheel.

—118—

Hobbing Machine, Gear, No. 16HS

Gould & Eberhardt, Newark, N. J. [Vol.60,p.194.]

This is a manufacturing machine especialy suited for the quantity production of gears and is readily adaptable for a diversified range of work. The machine will handle gears with a maximum of 3 diametral pitch, 18-in. diameter and 14-in.



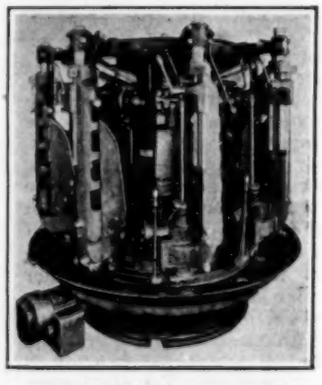
face. Special change gears can be furnished to cut tooth numbers from 3 to 50 and, with slight alterations, gears with from 3 to 160 teeth can be cut. The cutter is mounted in a carriage that slides on the vertical face of a heavy stanchion. The stanchion is arranged to slide on ways machined on the bed of the machine, its position being determined by the diameter of the gears to be cut. The work spindle is mounted vertically in a substantial bearing in the bed of the machine and a rigid outer support is provided for an arbor, if the blanks are mounted in that way. The spindle driving mechanism is simple and rugged so that the angular velocity between the cutter and work spindle is exceptionally uniform.

—119—

Hobbing Machine, Spline, Multiple-Spindle

Sommer & Adams, Co., 18511-18 Euclid Ave., Cleveland, Ohio. [Vol.60,p.337.]

This machine is desiged for the special purpose of hobbing splines on one end of automobile axle shafts. There are eight separate and independent working units mounted in a turret that rotates continuously about a vertical axis. Each unit consists of a hob and its driving mechanism mounted on the turret, and a work holding member that slides vertically



in guides on the turret and feeds the work past the hob. The machine is driven by a 7½-hp. motor which is geared to a drive shaft in the base of the machine, and from this shaft the power is taken for driving the hobs, the work, and the turret. The drive for the hob spindles and the work heads is taken from a vertical shaft at the center of the machine. The work is held in a chuck in the work head, the upper end being held on an adjustable center. The work holding unit is

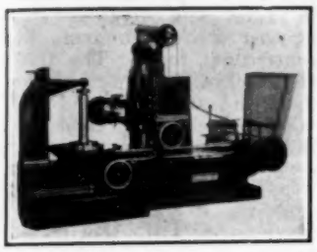
given its vertical feeding movement by a stationary cam located on the top of the base of the machine. Change gears in the drive are provided so that the proper relative speed of work and hob can be obtained.

— 120 —

Hobbing Machine, Gear, Automatic, No. 72-H

Gould & Eberhardt, Newark, N. J. [Vol.60,p.669.]

This machine is of the universal type arranged for automatically hobbing spur, helical, herringbone and worm



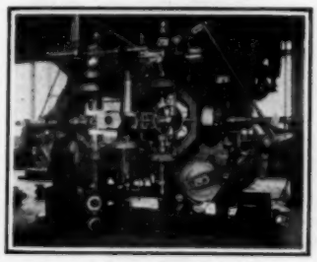
gears of all sizes within the capacity of the machine. It can also be used for milling spur and helical gears and worms by means of a disk cutter attachment incorporated in the basic design of the machine. The machine is rated for cutting up to 1½ diametral pitch in cast iron and 2 diametral pitch in steel. The hob is mounted in a swivel atached to a carriage that slides vertically on a stanchion. The stanchion is also arranged to slide on ways on the bed of the machine to accommodate various diameters of gears. The work spindle bearing housing is a unit attached to the bed of the machine and, by removing the large indexing wormwheel at the lower end of the spindle, the entire unit can be removed from the machine. All of the drive and feed gearing is segregated in a case at the end of the machine bed. All the necessary automatic movements are provided in the drive and stops are fitted to control the automatic movements of the cutter slide.

— 121 —

Reaming and Tapping Machine, Globe Valve, 6-In.

Pottstown Machine Co., Pottstown, Pa. [Vol.60,p.564.]

This machine has a total of eight spindles arranged in three fork-shaped heads, and these provide for the use of roughing, reaming and facing tools in any desired combination. The work-holding fixture has four chucks, one of which is loaded while the machine works on the pieces held in the others. The indexing of the turret fixture is performed by an air cylinder and, at the conclusion of indexing, the operation of the spindle commences automat-



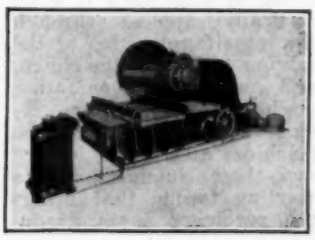
ically and the machine automatically stops at the completion of the cycle. The feed of each set of spindles is controlled by a cam that oscillates a wrist plate. The wrist plate is connected to the feed bell cranks by suitable rods, the rods being fitted in slots in the plate for adjusting the amount of feed. Each spindle has a longitudinal adjustment that can be made while the machine is in operation. The machine is driven by a 35-hp. motor mounted at the rear.

— 122 —

Saw, Friction, High-Speed, No. 5

Joseph T. Ryerson & Son, Inc., Chicago, Ill. [Vol.60,p.225.]

This size of saw is an addition to the series of such machines made by this company, and has been developed for heavy duty in large shops that handle the largest sections rolled. The blade of the saw is 61 in. in diameter and is ⅜ in. thick, the power for driving being furnished by a 125-hp. motor. The carriage that carries the saw and its driving motor is mounted on rollers on the heavy box-section base. The saw is covered by a large hood under which the clearance is 14¾ in. It is a soft-steel disk, hollow-ground on the sides and nicked on the edge to increase the friction.



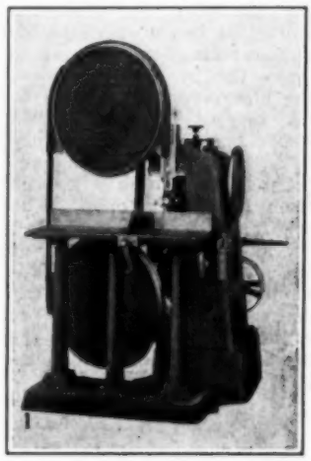
In operation the blade is cooled by jets of water. The machine is operated by the manipulation of two levers mounted on a control box that may be located where where most convenient for the operator. The saw may be fed by hand or by an automatic device.

— 123 —

Bandsaw, Metal-Cutting

Stockbridge Machine Co., Worcester, Mass. [Vol.60,p.524.]

This machine consists of a base on which are fastened a column and the work support table. The bandsaw wheels are mounted on a ram that slides on ways on the column and the saw is guided by two sets of guide rolls positioned above and below the work. The rolls are square with the



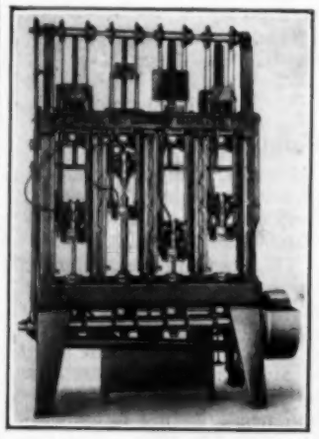
work and the top roll is adjustable up and down. The forward movement of the ram toward the work is caused by counterweights and suitable mechanism is provided to make the saw pressure conform to the conditions of the work. The required pressure is easily set and an automatic stop can be set to stop the feed at any point in the ram stroke. The machine can be driven by belt or direct-connected motor. Three sizes of the machine are available, cutting either squares or rounds up to 6, 9, and 12 in. respectively. The blades used are ⅝ in. thick.

— 124 —

Turning Machine, Bolt

Walter H. Foster Co., 50 Church St., New York, N. Y. [Vol.60,p.982.]

This machine has four independent units, the bolt forgings being located on centers with the shank ends uppermost. The driving heads are located in the base of the machine, the upper



ends of the forgings being centered on tailstocks that are adjustable ventically on guides. On the top of the machine are mounted the feed screws by which the motion of the cutter heads is obtained. Self-releasing nuts are threaded on the screws and are connected to the cutter heads by two push rods. Each feed nut is equipped with a trip rod, arranged to open the nut and disengage the feed motion at the end of the cut. The cutters are adjustable in the heads and are positioned by a mechanism guided by bars on the frame. These guides may be arranged so that taper bolts can be turned. An auxiliary machine can be furnished to drill the centers in the blanks and face the bottom of the heads of the bolts.

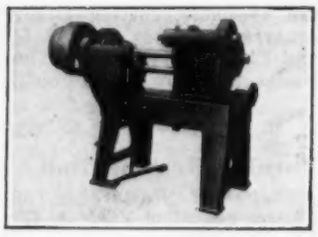
Other Machines

— 125 —

Beading, Curling and Trimming Machine

S & S Machine Works, 4522 Lexington St., Chicago, Ill. [Vol.60,p.715.]

This machine is designed to bead and trim brass shells up to 10 in. in diameter and ½ in. thick. The operator places the work in the chuck and depresses a pedal that operates the clutch on the rear shaft. A cam mounted on this shaft then automatically swings the arm that carries the beading and trimming roll and brings the roll into contact with the work. The necessary



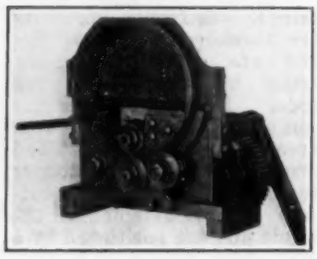
pressure is gradually applied and the arm swings back automatically when the operation is completed. The rear shaft then stops. An adjustment is provided to set the machine for different diameters of work. A two-step cone pulley is used to obtain a change in speed when desired.

— 126 —

Bending Machine, Ring

Wallace Supplies Manufacturing Co., 1312 *Diversey Parkway, Chicago, Ill.* [Vol. 60,p.638.]

This machine is intended for bending rings from bars, metal tubing, channeds or special sections, and is designed to eliminate the short straight sections sometimes left at the ends of the piece and necessitating hand work to finish the ring. The material is fed into the machine from the left and is gripped by the two center rollers, the gripping action being controlled by an eccentric lever at the back of the ma-



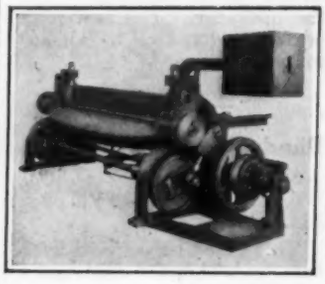
chine. Two adjustable shoes assist in guiding and forming the metal as it is drawn between the rolls. A shoe at the right of the upper center roller also fits the stock and acts as a guide, and a deflecting plate at the left-hand side of the machine causes the end of the ring to clear the rolls as it sweeps around.

— 127 —

Folder and Brake, Power, 72-In.

Niagara Machine & Tool Works, 637 *Northland Ave., Buffalo, N. Y.* [Vol.60,p. 716.]

This machine is designed to handle sheet metal up to No. 14 gage. A sheet can be bent at right angles at any distance from the edge and successive bends can be made to form a closed body from a single sheet. A 30-



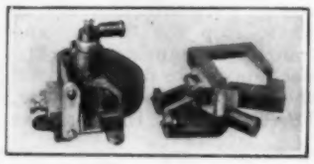
deg. bend can also be made along the edge of the sheet. The sheet to be folded is placed on the front brackets, a gaging apparatus being provided to gage the work quickly. The operator then steps on the clutch treadle, the clamping bar descends and grips the sheet, the folding bar swings up and back to make the bend, after which the clamping bar returns to its original position. The action is automatic. A safety device prevents the engagement of the clutch when the clamping bar is open. The angle of the fold is regulated by adjusting the throw of the crankpins which are mounted in T-slots in the gears. The length of the connecting rods between the crankpins and segment gears is also adjustable.

— 128 —

Notcher and Bender, Angle Iron

Whitney Metal Tool Co., Rockford, Ill. [Vol.60,p.824.]

This machine will handle 2 x 2 x ¼-in. angle iron or smaller and is built in two parts, one for notching and one for bending. These sec-



tions can be fastened together making a complete unit, or either section can be used independently. The angle is held in position on the notcher by a screw clamp and the shear is guided by a pilot that enters the die. The cutting blade is made of tool steel. The bender holds the angle against a solid jaw by means of a screw clamp. The bending shoe is pivoted on its arm so that the bend is accurately made.

— 129 —

Cleaning Machine for Polishing Wheels

M. G. Kopf, 612 *Schwind Bldg., Dayton, Ohio.* [Vol. 60,p.640.]

This machine utilizes a jet of steam or steam and water for cleaning, instead of the

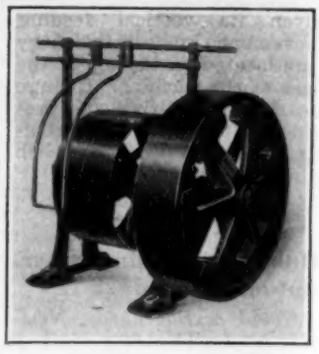
usual method of turning off the accumulated abrasive by means of a steel tool or a piece of broken grinding wheel. The machine has a sheet-metal cylinder, attached to an ordinary polishing lathe and provided with a removable cover. A steam nozzle enters the cylinder at one side and is mounted on a slide so that it can be adjusted to the proper distance from the wheel to be cleaned. The wheel is run at 2,200 r.p.m. with the steam turned on and the abrasive and glue are heated so that they are thrown off by centrifugal force and pass out the drain at the bottom of the cylinder. It is claimed that this machine will clean wheels up to 4 in. wide and 20 in. in diameter with no loss of wheel material and no change in the form of the wheel surface.

— 130 —

Pulleys, Clutch, Friction

Tolhurst Machine Works, Troy, N. Y. [Vol.60,p.152.]

These pulleys are designed for use with the centrifugal extractors, chip wringers and metal dryers manufactured by this company. The frictional driving force is automatically applied through the centrifugal action of the driving portion of the clutch, and no springs or other mechanical devices are required. The inertia of these machines at starting is high and these clutches apply a starting torque that brings the revolving parts gradu-



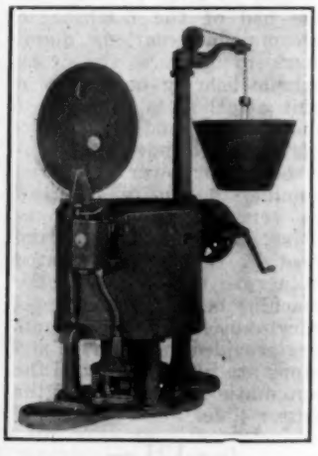
ally up to speed. When the belt is shifted the center spider starts off at full speed and a series of blocks located in radial slots are forced out against the clutch drum by centrifugal force. The friction of the blocks brings the drum up to speed and the whole mechanism then rotates as a unit.

— 131 —

Extractor, Oil, Motor-Driven

Curtis Machine Co., P. O. Box 44, *Worcester, Mass.* [Vol.60,p.269.]

This machine is for use in extracting oil from chips and its rotating member is a single unit, consisting of the supporting bearing, the motor and the central upright shaft, over which the chip basket is placed. The supporting bearing consists of a rounded stud resting in a tapered socket designed to take up automatically any



radial play that may be caused by wear. This bearing does not revolve but has a slight rocking motion while the machine is in action. The weight of the rotating parts is borne by the step bearing, and the bottom flange on the motor cage rests upon a circle of coiled springs that prevent the rotating member from tipping when stationary and dampen

the gyratory action when running. The rotor of the motor revolves in Timken radial and thrust bearings, the rotation of the motor cage being prevented by two ball-end studs which project from the cage into suitable slots in the base. The capacity of the chip basket is two bushels. The machine is equipped with a G. E. motor, and the controller is so interlocked with the cover that the motor cannot be started while the cover is open.

— 132 —

Separator, Screw Machine Product and Chip

McKenzie Engineering Co., New Rochelle, N. Y. [Vol. 60,p.488.]

This machine is an improvement over the model formerly made by this company. It has a stronger frame and a wider base; the screens and the side chutes have been eliminated; the receiving box is larger and is now made of cast iron. A specially designed blower with ring-oiled bearings is furnished and an adjusting cut-off for the air blast is provided in the outlet pipe. It is stated that the machine will separate parts as small as 0.063 in. in diameter from chips, and also from the long

curled steel chips, even when badly bunched. The capacity of the machine is about one bushel per minute.

— 133 —

Crusher, Chip

American Crusher & Machinery Corp., 1 Madison Ave., New York, N. Y. [Vol.60,p.637.]

This machine has been designed to reduce chips and turnings to such a size that the material can be easily transported and handled and can be satisfactorily melted up and reclaimed. Two sizes of the machine are furnished,

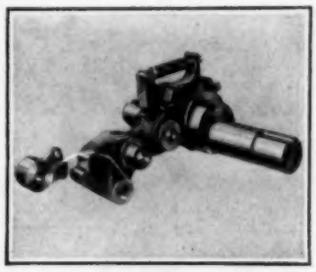
the smaller having a capacity for about 5 tons of chips in an eight-hour day and the larger for 5 tons of chips per hour. The body of the crusher is mounted on a heavy baseplate and encloses the driving gears and the vertical cutter shaft. The chips are dumped into the funnel-shaped hopper at the top and a cutter head at the top of the vertical shaft draws the material downward, cutting it against stationary blades secured to the inside surface of the hopper. In the neck of the hopper is a rotating knife head that completes the reduction of the chips. A shear pin in the drive is arranged as a safety stop.

— 134 —

Drop Lock, Rocker Type, for Forging Machines

Ajax Manufacturing Co., Cleveland, Ohio. [Vol.60,p. 154.]

This stop-motion device has been adopted as standard equipment on the forging machines made by this company. The apparatus is so constructed that the lock causes the pitman to pick up the ram when the eccentric is at dead center, thus accel-



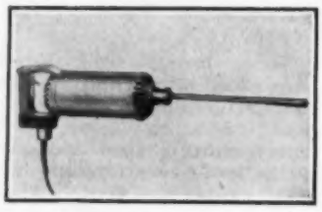
erating the load gradually and obviating the shock occasioned by engaging the usual hub clutch. The device is similar in principle to the slide block type of drop lock previously used on Ajax machines but it is superior in the shortness of the lock, the increased engaging area, and the smoother action. Its relatively light weight also eliminates the necessity for the counter-weight and timing lock used with the former design.

— 135 —

Hammer, Electric, Type F, "Syntron"

National Electric Manufacturing Co., Pittsburgh, Pa. [Vol.60,p.527.]

This is a smaller and lighter model of the hammer that was described on page 309, Vol. 59, of the *American Machinist*. It is designed for the lighter forms of work,



such as drilling holes up to ½ in. in diameter in concrete and light chipping. A movable piston in the device reciprocates in synchronism with the alternations of the electric current, the hammer striking 3,600 blows per min. when attached to a 60-cycle circuit. For direct current a small rotary converter is supplied.

— 136 —

Marking Machine, Dial-Feed

Noble & Westbrook Manufacturing Co., Hartford, Conn. [Vol.60,p.193.]

This machine is designed for stamping sizes, trademarks and other designs upon bushings or other cylindrical pieces of various diameters and lengths. The steel stamp is attached to the face of a small vertical slide and, when once set for a given diameter of work, has no movement. The feeding dial

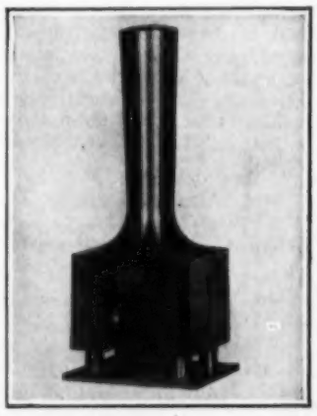
is a disk of tool steel having a number of V-shaped notches in which the pieces are carried under the stamp. The face of the stamp is slightly concave to conform to the arc described by the work pieces as they are rolled under it. The dial is driven through back gears from a driving pulley at the rear of the machine. The machine will handle pieces from ⅛ to 1¼ in. in diameter, and of any length up to 1½ inches.

— 137 —

Numbering Machine, Metal

American Numbering Machine Co., 224 Shepherd Ave., Brooklyn, N. Y. [Vol.60,p. 306.]

This hand-operated numbering machine is fitted with a special bottom plate that guides the device as the impression is made, and is intended for numbering metal, wood or fiber products. To imprint the number the bottom plate is placed on the work and a blow from a ham-



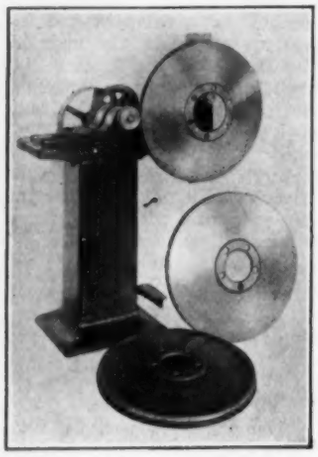
mer drives the numbering dies against the work. The number wheels are made of hardened tool steel and, since the bottom plate guides the body of the device squarely against the work as the impression is made, a sharp, clear-cut number results. The machine weighs four pounds.

— 138 —

Marking Machine, Flange

Noble & Westbrook Manufacturing Co., Hartford, Conn. [Vol.60,p.488.]

This machine is for the purpose of stamping the size, number and trademark upon the inner flange surface of disks that form the centers of disk wheels for automobiles. The stamp is a 3-in. roll having the permanent



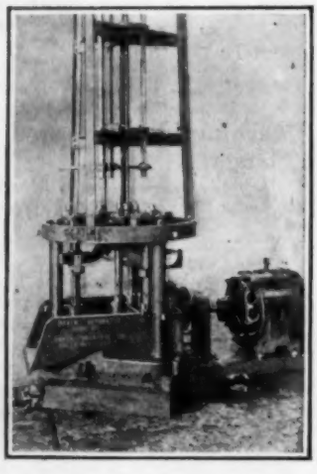
part of the mark in raised characters on its periphery. Numbers and sizes are made by separate segments that fasten in and can be conveniently changed. Another roll is mounted on a sliding head and forces the flange against the marking die, the sliding head being moved by a treadle. A toggle arrangement makes it impossible to put too much force on the pressure roll. The marking roll is driven through gearing from the driving shaft and pulley at the back of the machine. The stud upon which the work hangs is adjustable for different diameters.

— 139 —

Pipe Cutter, Automatic

Davis & Thompson Co., 253 *Reed St., Milwaukee, Wis.* [Vol.60,p.416.]

This machine is automatic in its action and is designed to cut off pipe nipples and similar parts at high speed. The upper framework of the machine holds three sections of pipe upon all of which operations are performed simultaneously. The pipes feed down to the tools by gravity. Each pipe drops on a stop that remains in position until the cutter is part way through the pipe, and the stop is then withdrawn allowing the nipple to fall as the cut is finished. One circular cutter is used and is located at the center of the machine, the lower end of the pipe being carried to the cutter by a cam-actuated arm and withdrawn after the cut. The machine will cut pipe from ¼ in. to 2 in. in diameter and from one to eight feet in length.

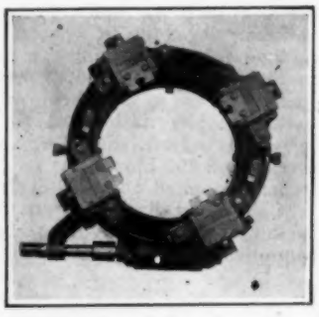


— 140 —

Pipe Cutter, Square-End, Beaver

Borden Co., Warren, Ohio. [Vol.60,p.673.]

Three larger sizes have been added to this line of pipe cutters, giving a total range from 2½-in. to 12-in. pipe. The feature of these cutters is the knife construction and the automatic feed. The



cutters operate like lathe tools, removing a thin shaving from the pipe at each turn and leaving no burr. They are mounted in a ring that is rotated by means of worm gearing from a driving shaft. The frame of the device is placed on the pipe and held in position by setscrews, so that the position of the drive shaft remains fixed. The cutter can be operated by a ratchet handle or by power. The knives are made of vanadium steel with guide sections which ride on the pipe ahead of the cutting edge, preventing digging in of the cutter and consequent breakage.

— 141 —

Polishing Machines, Heavy-Duty, High-Speed

Cleveland Armature Works, 4732 *St. Clair Ave., Cleveland, Ohio.* [Vol.60,p.714.]

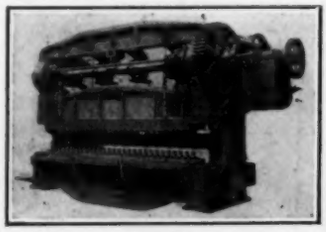
These machines are motor-driven and are designed to perform polishing operations on a rapid-production basis. The wheels run at 3,600 r.p.m., and the machines have construction features that properly hold the spindles at the high speed and insure satisfactory operation for a commercially practicable length of time. The spindles are mounted in Timken tapered roller bearings held in heavy steel containers. The smaller machine, shown in the illustration, is adapted for ordinary work and is built in sizes from 4 to 10 hp. For larger and heavier work machines with motor capacities from 5 to 15 hp. are furnished and the spindles are carried in four roller bearings. The lighter machines have two bearings for the spindle.

— 142 —

Punch, Shear and Forming Press, Combination

Cleveland Punch & Shear Works Co., Cleveland, Ohio. [Vol.60,p.678.]

This machine as illustrated is arranged as a multiple punch. The distance between the vertical housings is 12 ft. 2 in., and the height of the horizontal gap is 15 in. The slide is adjustable and safety counterweights are provided. The automatic stripper is adjustably mounted on trunnions below the sliding head, the adjustment being provided so that the stripper fingers will always strike the stock squarely and prevent



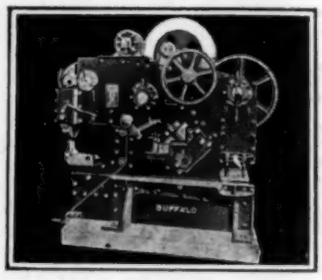
binding on the punches. Each punch or die requires but one bolt to hold it securely in place, the tail of the holders fitting into a slot. With this single-bolt design one man can set up the machine without trouble. A plate-shearing attachment is interchangeable with the punching apparatus and can be quickly installed on the machine when required.

— 143 —

Shear, Punch and Bar Cutter, Improved

Buffalo Forge Co., 490 *Broadway, Buffalo, N. Y.* [Vol.60,p.715.]

All of this line of machines have been redesigned to some extent but the essential features remain as previously described in the *American Machinist*. The mitering arrangement has been improved by providing a stripper screw that is universal and requires no adjustment. The three large cast-iron main gears furnished on former machines have been displaced by steel gears, and nickel-steel pinions are used. The gears are considerably smaller without any reduction in strength. The side bracket used for supporting the plates for a slitting operation has been improved by casting the bracket and its supporting



legs in one piece. The gear shear clutch is now located on the operating side of the machine where it is more convenient to control.

— 144 —

Bar Cutter, Improved

Buffalo Forge Co., 490 *Broadway, Buffalo, N. Y.* [Vol.60,p.868.]

A universal bar cutter arrangement is now being furnished on these machines, the positioning of the plunger counterbalancing springs has been improved, and a recently designed drive bear-

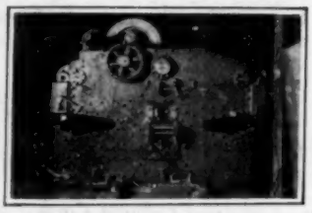
ing for the main shaft is incorporated. The plunger and gears are of cast steel and all bearings are bronze-lined. A more positive arrangement for engaging the plunger in the smaller sizes of these machines is made possible through the use of an improved block and ram controlled by a counterweighted lever. The cam arrangement for the jaw type clutches on the larger machines has also been changed for the purpose of gaining speed and ease of operation. The machines can be driven by either belt or motor.

— 145 —

Shear, Punch and Bar Cutter, Railroad

Buffalo Forge Co., 490 *Broadway Buffalo, N. Y.* [Vol.60,p.903.]

This machine is especially adapted for work in railroad shops and the design is similar to that of the former machines made by this company. An important feature of the



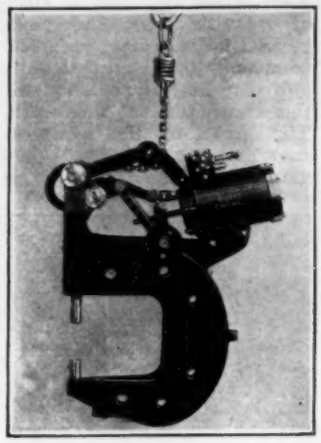
machine is a universal bar cutter arrangement, in which the bar cutter can be used for rounds, squares, angles, flats and tees without changing knives. Structural shapes can also be cut, but a different knife is required for each size and shape of section. When a considerable amount of punching is to be done the knife on the shear end of the machine can be removed and replaced by punching tools. The punching capacity of the machine ranges from 1x½-in. for the smallest size to 1¾x 1½-in. for the largest. The slitting capacity ranges from ½- to 1½-in. plate.

— 146 —

Suspension, Plunger, for Hanna Riveting Machines

Hanna Engineering Works, 1765 *Elston Ave., Chicago, Ill.* [Vol.60,p.340.]

The use of this suspension causes the upper die of the pneumatic riveter to remain stationary and the lower die to move as the rivet is driven. A chain, attached to the upper die plunger, passes over a sheave on the upper toggle pin and under a sheave placed at the top of the ma-



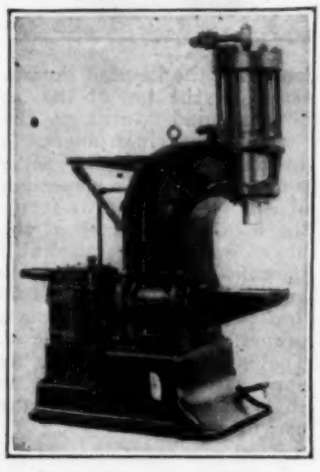
chine. The section of the chain leading from the latter sheave to the suspension hook is directly over the center of gravity of the riveter when the die axis is verticla. The upper die is placed against the rivet and the whole frame of the riveter rises as the mechanism is operated, bringing the lower die against the lower end of the rivet. The rivets can be placed in the holes from above when this mechanism is used and the speed of the crew is therefore increased.

— 147 —

Riveter, Hydraulic

Oilgear Co., 398-408 *Thirty-eighth St., Milwaukee, Wis.* [Vol.60,p.344.]

This self-contained machine is built in two sizes with pressures of 10 and 20 tons, respectively. It can be placed in any convenient position on the shop floor and operated from any constant-speed source of power. The pump equipment consists of a type 23 Oilgear constant-pressure pump that furnishes oil to the cylinder under steady pressure and free from pulsations. The base of the machine has an extension at the back on which the pump is mounted, the upper frame



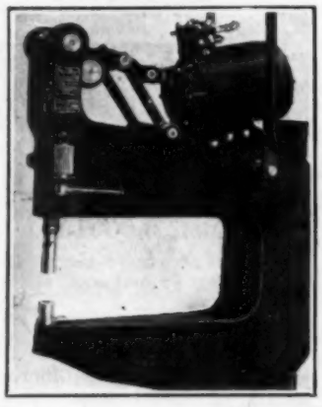
being bolted to the base and carrying the vertical ram cylinder. Below the cylinder a removable worktable or horn is mounted in a suitably machined socket. The operator controls the machine by means of a treadle and the speed of the machine is only limited by the adeptness of the operator in placing rivets. The stroke is 4 in. and the work can be so positioned that the ram just clears the work at the top of its stroke.

— 148 —

Die Screw Adjustment

Hanna Engineering Works, 1765 *Elston Ave., Chicago, Ill.* [Vol.60,p.824.]

This device hase been developed for rapidly adjusting the die screw on the riveting machine made by this company. A large ratchet gear is rotated by a suitable ratchet handle and transmits its motion through an idler to a vertical gear. This gear is



mounted on a shaft which is fastened by a pin to the upper end of the die screw. The ratchet gear is of such length that the idler can slide on it throughout the full stroke of the riveter and remain in mesh at all times.

— 149 —

Scraping Machine, Jib Type

Anderson Bros. Manufacturing Co., Rockford, Ill. [Vol.60,p.566.]

This arrangement is designed to increase the flexibility of the pneumatic scraping machine and permits the operator to perform scraping operations on any work located within a radius of 19 ft. The mechanism of the scraper is mounted on a trolley that runs on the I-beam of a swinging jib, the jib pivot being attached to any convenient wall or post. The trolley is automatically

locked to the I-beam as soon as the throttle is pushed forward to admit air to the scraper ram, so that the device can be operated with the trolley at any position in the 12-ft. length of the I-beam. The jib is also locked simultaneously, so that a rigid support for the device is provided as the forward stroke of the ram is made. When the air is released at the end of the stroke, the trolley and jib are unlocked and the apparatus is free to move to any position.

— 150 —

Screwdriver, Electric, No. 3

Black & Decker Manufacturing Co., Towson Heights, Baltimore, Md. [Vol.60,p. 71.]

This portable tool weighs 15 lb. and is designed for heavy-duty production work, such as driving large wood screws and lag screws and

running up nuts on large bolts. The spindle is equipped with a positive clutch that automatically disengages when the forward pressure on the tool is released. A universal-type motor furnishes the driving power and can be furnished to operate on all standard voltages up to 250 volts.

— 151 —

Welder, Spot, Motor-Driven, A.E.F.

American Electric Fusion Corp., 2610 *Diversey Ave., Chicago, Ill.* [Vol.60,p.71.]

This welder is fitted with an automatic control that makes high-speed operation possible, and is adapted for

a wide range of application including production welding operations on a variety of materials, from fine wire to comparatively heavy sheet metal. The automatic control turns the current off and on and applies the pressure, the current being used

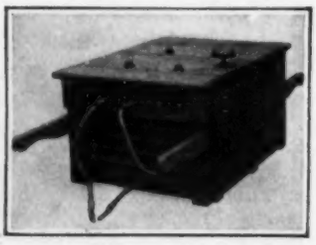
in the quantity and for the length of time necessary to complete the weld. A Westinghouse motor provides the power for driving, and the welder operates at a speed of 110 spots per min., with equal change gears in the drive. Other change gears provide speeds of 80 and 140 spots per min. and, by the use of special gears, a speed as low as 13 per min. can be obtained. A quick-change mechanism can be furnished giving a range from 20 to 120 spots per min. in nine steps. A treadle is provided for starting and stopping the machine, and one or a series of welds can be made.

— 152 —

Welding Machine, Electric, Universal

Electric Arc Cutting & Welding Co., 152 *Jelliff Ave., Newark, N. J.* [Vol.60,p. 451.]

This machine is so designed that practically any power supply can be made available for welding operations. The variations in voltage are met by varying the combinations of the coils of the primary winding. To make the same machine operate on 25 to 40 cycles, taps and adaptor windings are used to secure the proper



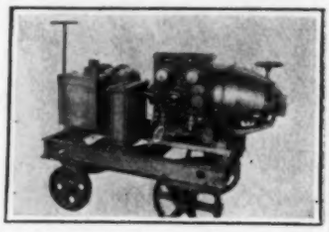
electrical characteristics. The blower and the automatic switch also operate on all voltages. By using a resistor-reactor combination inserted in the secondary winding, the apparatus will also operate on direct current at 110 or 220 volts. The transformer core is of silicate steel, double asbestos-covered magnet wire is used in the windings, and adjacent layers are separated by pure mica. All wire joints are welded, asbestos tape is used and there is nothing in the transformer to melt or char at working temperatures.

— 153 —

Welder, Arc, Portable

General Electric Co., Schenectady, N. Y. [Vol.60, p.829.]

This welder is a two-unit set, consisting of a motor and a generator, in which all regulation of current is accomplished by turning a handwheel on the generator. Any of the commercial sizes of metallic electrodes from $\frac{1}{16}$ to $\frac{1}{4}$ in. in diameter can be used and the generator voltage can be adjusted to suit the character of the work. The limits of the available current are 75 and 300 amperes. The outfit is



equipped with roller-bearing wheels, has holes in the base for crane hooks, and is adjustable for long or short leads. All parts, including generator, motor, generator control panel, motor starter and stabilizing reactor are mounted on a structural steel base of rigid construction and light weight.

Measuring, Gaging and Testing Equipment

— 154 —

Gage, Dial, 0.0001-In.

Federal Products Corp., 15 *Elbow St., Providence, R. I.* [Vol.60,p.153.]

The dial of this gage is 3$\frac{1}{2}$ in. in diameter and is graduated to read in increments of 0.0001 inch. This size of dial makes the gage easy and convenient to read

despite the high amplification. The graduations are furnished to read from 0 to 100, plus or minus, or from 0 to 200.

— 155 —

Comparator, Dial

Federal Products Corp., 15 *Elbow St., Providence, R. I.* [Vol.60,p.231.]

The dial of this measuring instrument is graduated to read in ten-thousandths of an inch, the range covered by the measuring jaws being $\frac{3}{4}$ in. The measuring spindle may be raised and held in any desired position by

loosening the knurled thumbscrew on the top of the indicator and turning the collar. The instrument is designed to be used as a comparator for the inspection of small pieces, and is set to the nominal diameter of the piece minus the allowable tolerance. An adjustable back-stop pin is provided to assist in locating the piece properly between the jaws. The gage is attached to its support by a swivel joint so that it may be set at any convenient angle.

— 156 —

Gage, Dial, with Bezel Lock

B. C. Ames Co., Waltham, Mass. [Vol.60,p.344.]

The addition of a bezel lock to the No. 55 dial gage made by this company is desirable when the gage is to be set and operated in one position

for some time. It is furnished as special equipment when desired. The lock is particularly useful where the gage is subject to vibrations or contacts which might change the position of the bezel. The lock is positive and does not interfere with the setting of the bezel.

— 157 —

Gage, Thickness, Model 22

Federal Products Corp., 15 *Elbow St., Providence, R. I.* [Vol.60,p.903.]

The frame of this gage is made of aluminum and is designed to be conveniently grasped by the operator when

it is to be used continuously as in inspection work. The measuring spindles are hardened and ground and can be furnished with either round or flat ends. The range of the spindle movement is such that stock up to 0.500 in. in thickness can be measured. The depth of the throat is 2 inches. The finger lever at the top of the instrument is used to open the jaws for inserting the work.

— 158 —

Indicator, Dial, No. 50

Federal Products Corp., 15 *Elbow St., Providence, R. I.* [Vol.60,p.980.]

The dial of this indicator is graduated to half-thousandths and reads to 0.015 in. as a plus-or-minus gage.

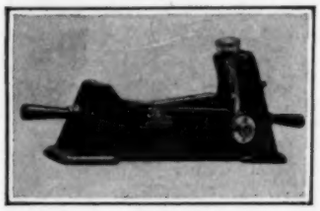
It may also be graduated to read cumulatively in one direction. The capacity of the instrument is 0.3 in. It is provided with a bezel lock and a rotating bezel, and can be readily disassembled by removing the cap and withdrawing four screws.

— 159 —

Level, Machine, Precision, 30-Deg., Societé Genevoise

R. Y. Ferner Co., 1410 *H St., N. W., Washington, D. C.* [Vol.60,p.671.]

This instrument is intended for use when accurately leveling the beds of machinery, for measuring the desired tilt of work tables for angular work, or for measuring angles on the



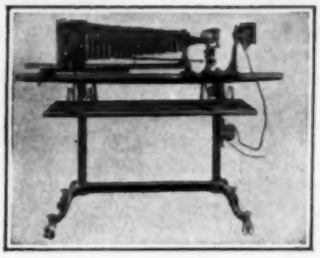
work itself within the 30-deg. range. A graduated level vial is pivoted on the heavy cast-iron base of the instrument and is tilted by means of a worm that meshes with an accurate sector. When the base is horizontal and the bubble of the level is between the graduations on the tube, the micrometer on the worm and the sector index will read zero. The level vial is said to be sensitive to six seconds of arc per division, and an accuracy of reading to within 10 seconds is guaranteed by the maker.

— 160 —

Metallographic Equipment

Bausch & Lomb Optical Co., Rochester, N. Y. [Vol. 60,p.526.]

This outfit consists of a large inverted miscrosope and a complete illuminating system, mounted upon a common base This base may be held on spring shock absorbers on a supporting stand as shown in the illustration. The metalloscope proper is mounted in front of the camera, the microscope and illuminating unit being carried



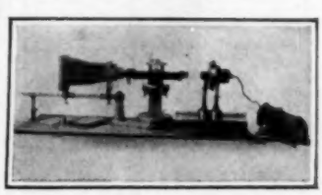
on the same base. The stage of the microscope is provided with a rack and pinion movement in two directions and has a circular stage plate with a V-slot in it to accommodate specimens of various sizes and shapes. The vertical illuminator has a side tube and condenser, a sliding diaphragm with four apertures, and a ray filter giving practically monochromatic light. A Mazda lamp with a solid strip of tungsten provides a homogeneous and constant light.

— 161 —

Microphotographic Attachment for Zeiss Portable Microscope

George Scherr, 143 *Liberty St., New York, N. Y.* [Vol. 60,p.716.]

The Zeiss portable microscope was primarily intended



for inspecting work in the shop, but by the aid of this attachment it is adapted for the usual laboratory work as well. The attachment consists of a base on which all the components are mounted in their proper positions by means of clamping bolts. A special illuminating tube with an eccentric diaphragm is provided, the light source being a 50 c.p. Nitra bulb. The photographic equipment includes suitable lenses, a ground-glass slide, plate holders, and a stationary green filter. The plate holders will accommodate plates up to 3¼ x 4¼ inches.

— 162 —

Tape, Oil Gaging

L. S. Starrett Co., Athol, Mass. [Vol.60,p.339.]

This device is for gaging the amount of extra-heavy oil in tanks and similar containers. The tape is ½ in. wide and is mounted in a nickel-plated frame. The drum is cored for lightness and the handle is made sufficiently long to give a good leverage. The bob is nickel-plated and weighs 18 oz. The

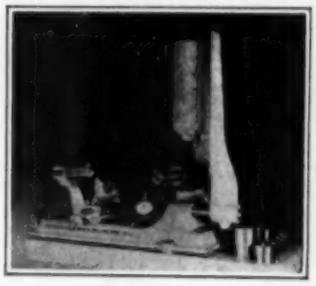
tape is 50 ft. long and is graduated in feet, inches and eighths of an inch.

— 163 —

Jig, Aligning, Sulprizio's

United Engine & Machine Co., Fresno, Calif. [Vol.60, p.72.]

The purpose of this device is to test the alignment of an automobile piston, connecting rod and wristpin. The crank-pin bearing of the connecting rod is mounted on the main arbor and the wrist pin alignment is then tested by the parallel blocks at the other end of the apparatus. These blocks can be swung out of the way, if desired,



and the alignment can be carefully tested with the dial indicator. The upright gaging surfaces are for testing the alignment of the piston, the piston, wristpin and connecting rod being assembled together and swung to a vertical position for this purpose. A series of bushings are provided for the arbor so that various sizes of crankpin bearing ends can be accommodated. The parallel blocks are mounted on a carriage so that connecting rods of different lengths can be tested.

Material Handling Equipment

— 164 —

Tructor, "Hi-Lo"

Elwell-Parker Electric Co., Cleveland, Ohio. [Vol.60,p. 153.]

This heavy-duty portable electric elevator is adapted for the handling of heavy

castings, dies, and parts, and their transportation over rough floors. The machine will take its load at any height up to 6 ft., transport it, and deposit it on the floor, or at any height up to 6 ft. The load capacity is 6,000 lb. and the device can be driven through a 42-in. doorway. The heavy arms that support the platform have a vertical portion at their rear ends, and on each of these are mounted two rollers which carry the thrust of the platform and its load. The power for hoisting is derived from an Elwell-Parker motor, located on top of the battery compartment and connected to a double-grooved hoist drum. From this drum cables run over sheaves at the top of the elevator frame to

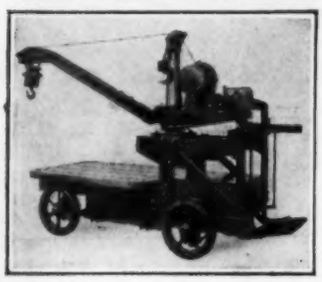
a secondary drum that is keyed to a shaft on the platform. This shaft carries pinions at its outer ends that mesh with a vertical rack on the frame. The rate of travel of the loaded machine is from 300 to 400 ft. per min., and the rated load is raised at from 5 to 6 ft. per minute.

— 165 —

Truck, Crane, Industrial

Crescent Truck Co., Lebanon, Pa. [Vol.60,p.159.]

The crane unit of this machine is mounted on a structural framework adjacent to the dash. An independent motor drives the hoisting drum through worm



gearing, the weight of the mechanism counterbalancing the load. The lifting capacity is 1,500 lb., and the crane is of the compensating type with four fixed positions. The crane apparatus swivels through an angle of 180 degrees, so that the load can be picked up at either end or the side. The truck proper is a standard Crescent GC unit, whose turning radius is such that it can be driven into an ordinary box car. All controls for the travel of the truck are at the operator's position and the usual safety interlocking devices are provided. Circuit breakers are also provided in the crane mechanism to insure proper operation and obviate overloading difficulties.

— 166 —

Tructractor, "Duat"

Clark Tructractor Co., Buchanan, Mich. [Vol.60, p. 229.]

This small haulage vehicle is driven by a gasoline motor and is provided with a crane attachment that can be quickly attached to the front of the machine. The superstructure is carried on three wheels and the machine will pivot on one wheel so that it will turn around in an ordinary box car. The crane attachment converts the tractor into a mobile crane that will lift and carry its 2,000-lb. load at any height up to 56 in. The machine was de-

signed for loading and unloading box cars, lifting and towing loads in narrow factory aisles, and for interplant haulage. The two traction wheels are 16 in. in diameter, the wheelbase length is 40 in. and the tread is 33 inches.

— 167 —

Truck, Long Wheelbase, "TEC"

Terminal Engineering Co., 17 *West 44th St.,* New York, N. Y. [Vol. 60,p.338.]

This truck will carry a load of 5,000 lb. and its large load-carrying area makes it available for bulky goods. All four wheels drive and also steer, each wheel being driven by a vehicle-

type motor enclosed in a weather-proof case. The wheelbase is 91 in. in length. The body is mounted on four leaf springs and the wheels are rubber-tired. Brakes are regularly fitted on two wheels but can be supplied on all four if desired. The truck is for use with separable bodies, being driven under them as they stand on legs and lifting them by means of four screw jacks operated by a motor similar to those used for driving. A spring drawhead is provided so that the truck may be used as a tractor. The coupler is automatic and is released from the operator's position.

— 168 —

Tractor, Three-Wheel, Heavy

Crescent Truck Co., Lebanon, Pa. [Vol.60,p.452.]

This machine is considerably heavier than former models made by this company and is built to stand up under exceptionally severe service. The G. E. motor has a large over-load capacity. The drive incorporates a Brown - Lipe differential driven through a worm and wormwheel. All casting are of steel and the frame is built up out of structural steel

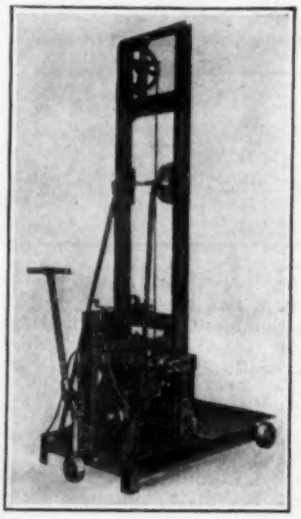
shapes hot-riveted together to provide tight joints. The driving axle is of chrome-nickel steel, heat treated and SKF ball bearings are used in the driving unit. Timken roller bearings are also provided in the drive. An oversize controller made by the Cutler-Hammer Manufacturing Co. is furnished.

— 169 —

Stacker, Power, Electric

Lewis-Shepard Co., 568 *E. First St., Boston, Mass.* [Vol.60,p.34.]

This machine is for heavy and continuous service and is designed for connection to any available power circuit. The upright frame is hinged so that it can be moved through doorways and under low beams. The heights vary in multiples of 6 in. from 6 to 14 ft., and the capacities from 1,000 to 2,000 lb. The surface of the lifting platform is 24 x 36 in. and may be plain or equipped with rollers. The frame is made of structural steel and the plate platform is 8 in. above the floor in its lowered posi-



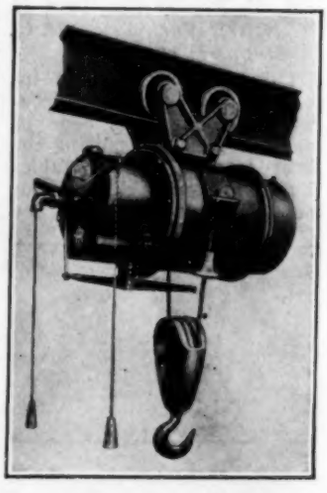
tion. The net lift is 24 in. less than the total height of the machine. The motor has a capacity of 2½ hp. and drives through suitable worm gearing enclosed in an oil-tight housing. The lifting speed of the 1,000-lb. machine is 40 ft. per min., the 2,000-lb. machine operating at 20 ft. per min. Automatic safety stops are provided. The minimum possible height of the lower section is 54 in. and the upper section is automatically locked in position.

— 170 —

Hoists, Motor, Air, Heavy

Ingersoll-Rand Co., 11 *Broadway, New York, N. Y.* [Vol.60,p.342.]

This company is now marketing a complete line of motor hoists with capacities ranging from 500 to 10,000 lb. The 500-lb. hoist was previously described. The salient features of these hoists are compactness of design; relatively light weight; an automatic brake that holds the load when the air supply is shut off or disconnected; and a graduated throttle that provides close regulation. A balanced three-cylinder motor provides the power. The motors are geared through mechanical



trains to the hoisting drums, a safety stop being provided to stop the motor when the load reaches the top of the lift. Motor and gears are fully enclosed, bronze bushings are fitted at necessary points, and ample provision is made for lubrication. The motor is said to possess exceptional freedom from vibration, ability to run slowly at all loads, and to operate with little lubrication trouble, even when subjected to considerable neglect.

— 171 —

Elevator, Service, Portable

New Jersey Foundry & Machine Co., 90 West St., New York, N. Y. [Vol.60,p. 523.]

This device is designed to handle loaded trucks, wheelbarrows, etc., from one elevation to another, where the usual freight elevator would not be practicable. The apparatus may be used in a fixed position or may be moved about from place to place. It is especially useful for serving cupola charging platforms, mezzanine floors, for elevator service between two floors, or from floor to box cars. The standard capacities range from 1,000 to 6,000 lb., and the platform sizes from 42x60 in. to 6x10 ft. Automatic electric stops are provided in all necessary positions and the movement of the platform can be controlled from either the high or low levels or the platform. The motor is automatically stopped and the brake is applied by the occurrence of low voltage or failure of current. The device is simple in operation and can be used by unskilled labor.

— 172 —

Hoist, Car, Portable

Whiting Corporation, Harvey, Ill. [Vol.60,p.901.]

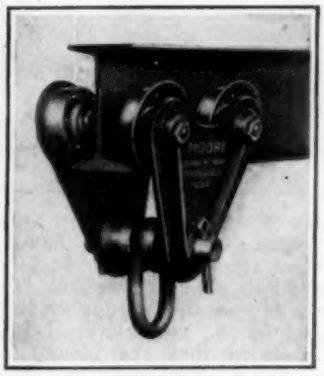
This portable unit makes unnecessary a special foundation or pit, and it can be used in any part of the shop or yard. Power is required to lower the hoist, so the car can be supported without blocking and can be left in position. When removing trucks four hoists are used, two at each end of the car. When removing wheels or springs two hoists are used and the truck is supported by suitable clamps. The hoist is a motor-driven screw jack mounted in a substantial frame. One, two, or four hoists can be operated as a unit, the control being centralized in one push-button station.

— 173 —

Trolley, I-Beam, Moore

Chisholm-Moore Manufacturing Co., Cleveland, Ohio. [Vol.60,p.980.]

This device will handle loads up to one ton and is made in one size only. The pressed steel wheels have ball bearings built into them, so that the wheels and bearings form complete units. There is sufficient flexibility to distribute the load equally on all four wheels. The side frames are made of steel and are adjustably spaced by washers on the equalizing pin. The device can be made to fit any size of I-beam from 4- to 7-in. When the I-beam is closed at both ends the device can be disassembled by taking out the equalizing pin and reassembled on the beam. The link can be removed and the hook of the hoist placed directly on the equalizing pin if additional height is required.



— 174 —

Wheels, Industrial Truck, "Rubwood"

Rubwood Wheel Co., Monson, Mass. [Vol.60,p.751.]

The body of this wheel is made from a series of thin wood disks, between which layers of rubber are placed by a method that causes the rubber to impregnate the surfaces of the disks and form a very strong bond. The rubber tread is then built up on the combined wood and rubber center. The wheels can be furnished in any diameter, width or bore desired, and the thickness and shape of the tread can be suited to the conditions of use. These wheels are said to be exceptionaly resilient and to provide excellent wearing qualities.

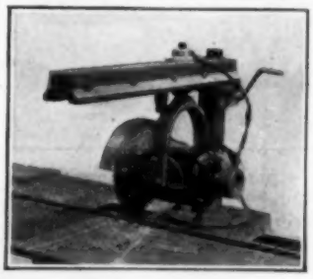
Woodworking Machinery

— 175 —

Woodworking Machine, "Dew-All"

DeWalt Manufacturing Co., Leola, Lancaster, Pa. [Vol. 60,p.562.]

This apparatus consists of a column that can be attached to the bench, carrying a slotted arm in which slides the motor supporting bracket. This bracket may be clamped in any desired position in the slot, and carries the motor by means of trunnions at the lower end. This mounting gives the motor, and the saw or other tool attached to the motor shaft, a practically universal movement in relation to the slotted arm. The tool will cut material up to 2 in. thick and 15 in. wide.



— 176 —

Saw, Cut-Off, Woodworking, H & A

Heston & Anderson, Fairfield, Iowa. [Vol.60,p.752.]

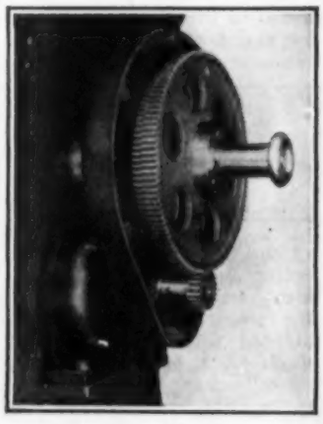
This portable electric swinging cut-off saw has sufficient capacity to handle wood 2 in. thick and 12 in. wide. The machine is self-contained and can be connected to any lamp socket. A standard 18-gage saw 12 in. in diameter is used and runs at 2,100 r.p.m. The saw and its driving belt are suitably guarded. The swing is made from a structural steel channel section and carries the motor on a slide, so that it can be moved to tighten the belt.

— 177 —

Bandsaw, Two-Speed Arrangement

Porter-Cable Machine Co., 1708 N. Salina St., Syracuse, N. Y. [Vol.60,p.868.[

The gearing illustrated is being fitted to the 20-in. bandsaw manufactured by



this company to adapt it to the cutting of both wood and metal. Large and small pinions are mounted on the motor shaft and the driving shaft of the machine carries a double sliding gear. The sliding gear is moved by a knob which projects from the gear case. When it is desired to cut metal this knob is pulled out and the speed of the machine is reduced by one-half. The regular saw speed of the machine for cutting wood is about 3,000 ft. per min. The addition of this device makes the machine also available for cutting aluminum, brass, hard rubber and fiber as well as for wood.

Small Tools

— 178 —

Handle, File, Improved, Skroo-Zon

Safety Tool Corp., 124 E. Moulton St., Watertown, N. Y. [Vol.60,p.231.]

This is an improved design of the file handle formerly made by the Thurston-Bernay Co., San Francisco,

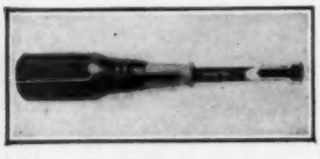
Calif. In the former model the threaded die was in two parts, but the present handle incorporates a one-piece die. This eliminates any tendency for the file to wabble in the handle and provides a firm grip. The handles are furnished in a range of eight sizes, the largest being suitable for soldering irons and scrapers, as well as files. The former model was described on page 529, Vol. 52, of the *American Machinist*.

— 179 —

Wrench, Socket, "Spintite"

Stevens & Co., 375 Broadway, New York, N. Y. [Vol. 60,p.231.]

These wrenches are furnished in three sizes to fit ¾-, ⅞-, and 1-in. hex nuts. The stems are hollow so that a



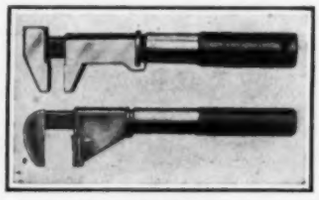
nut can be tightened on a projecting screw. The tools have screw-driver handles. The wrenches are especially adapted for assembly work on electrical or other devices, as well as for general use in homes and garages or on radio apparatus.

— 180 —

Wrenches, Nut and Pipe, "Ever-Grip"

Ever-Grip Wrench Co., 129 So. LaSalle St., Chicago, Ill. [Vol.60,p.562.]

These wrenches are constructed so that the jaws can be opened and closed by turning the handle. The construction is simple, there being only three parts in the nut wrench and five in the pipe wrench. The upper jaw and wrench bar are forged in one piece, the sliding jaw being connected to and operated by the handle, which



is made of Shelby steel tubing. It is said that the wrench is convenient to adjust and release, can be operated easily with one hand and will not jam under pressure. The outer jaw is the movable one, so that the leverage of the tool increases with the opening between the jaws.

— 181 —

Hammer, Shock Absorber

Heller Brothers Co., Newark, N. J. [Vol.60,p.714.]

This is a machinist's hammer in which a rubber cush-

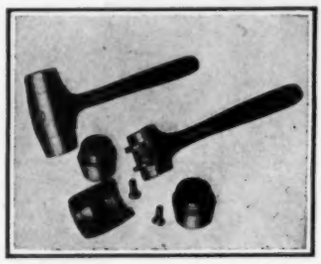
ion or bushing is inserted between the handle and the head. The rubber cushion is said to absorb much of the shock of the hammer blow.

— 182 —

Hammer, Metal, Soft, "New Tip"

Bilton Machine Tool Co., Bridgeport, Conn. [Vol.60,p. 944.]

The faces of this hammer are die-cast pieces of lead, babbitt or similar material,



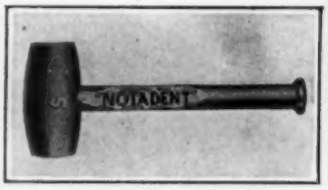
and are renewable without difficulty or loss of time. The handle and the lower half of the head are in one piece, and the cap is held in place by machine screws. Renewal of battered tips involves only the withdrawal of the two screws, shaking out the tips to be discarded, setting in new castings, and replacing the cap and screws.

— 183 —

Hammer, Metal, Soft, "Notadent"

New England Sales & Engineering Co., 4 Walnut St., Worcester, Mass. [Vol.60,p. 981.]

These hammers are made in six sizes, three of which



are babbitt and three of bronze. The babbitt hammers are furnished in 3-, 5-, and 8-lb. sizes, the weights of the bronze styles being 2¼, 4, and 5¼ lb., respectively. It is stated that the blending of the materials is such that the hammers will stand rough usage with the least amount of wear.

— 184 —

Boring Bar, "Twin Head"

G. Rachard, 504 E. 17th St., New York, N. Y. [Vol. 60,p.72.]

This boring bar is designed to make the tool adjusting and changing operations easy and quick. The body of the bar is made of double, extra-heavy steel pipe. A clamping rod for the cutter is arranged in the center hole, so that the clamping is done by turning a screw at the back end of the bar. One of the features of the tool is its

ability to hold the tool bit either at right angles, or at an angle of 45 deg. with the axis of the bar. The same clamp rod holds the tool in either position, so that changing the position of the cutter is easily accomplished.

— 185 —

Files, Rotary

Rotary File Co., 1570 Richton Ave., Detroit, Mich. [Vol. 60,p.489.]

These files are intended to lessen the inconvenience of

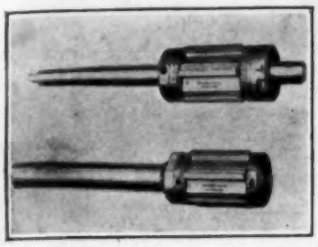
hand filing and fitting punches to dies. The straight type of rotary file is held in a drill chuck and the work to be filed is brought against the revolving file with a gentle pressure. The action is that of an end mill. Another type for the filing of break clearance has a shank that is smaller than the body by the amount of break required. When the shearing edge of the punch is finished, the body of the punch is filed away until the shank of the file comes into contact with the finished edge. The edge acts as a stop and a guide and it is impossible to file an excess of clearance. The break clearance will be even all around the punch, even with intricate contours.

— 186 —

Reamers, Expansion

Lambert Tool Co., East 55th St. and Euclid Ave., Cleveland, Ohio. [Vol.60,p. 672.]

These tools are intended for use in rapid production



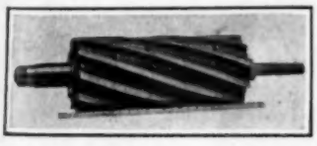
work and have exceptional ranges that make them available for a variety of work. A bore-reamer can be furnished to fit any size boring bar. The tool shown is the 5-in. size and expands to 6 in. Three roughing tools are mounted at the right of the reamer blades. Other diameters and ranges of expansion can be furnished to fit practically any bore. Machine reamers and line boring reamers are included in the series and are shown in the illustration. All the tools can be adjusted to within 0.001 in. of the required diameter and each end of the blades can be adjusted independently. This feature makes it possible to give the blades a slight taper at either end.

— 187 —

Milling Cutter, Slab

Union Twist Drill Co., Athol, Mass. [Vol.60,p.827.]

This cutter has inserted helical teeth and is designed for heavy work, its strong construction and the method adopted for holding the blades adapting it for such service. It is made by combining five separate units in proper relation. The diameter is 8 in. and the length is 20 in. The slots in



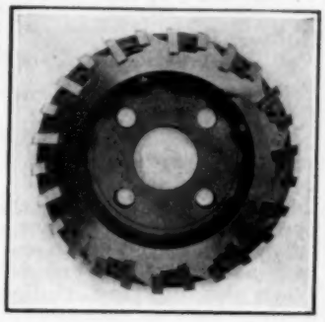
which the blades are held are straight and the blades are secured by half-round taper pins or wedges. The body of each blade is also straight, the helical shape being milled on the cutting edges after the blades are properly positioned in the cutter body.

— 188 —

Milling Cutter, Face

Modern Tool Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. [Vol.60,p.828.]

This is an inserted-tooth cutter in which all parts are hardened and ground. The cutter head is designed to use Stellite or high-speed steel blades. Each slot of the cutter holds two blades which are locked securely in position by means of a two-piece clamp and a wedge bolt.



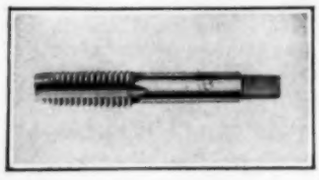
The clamps bear on the top of the blades and the action of the wedge tends to pull the blades against the bottom of the slot, as well as to hold them securely against the sides. The use of the wedge for clamping make a high degree of accuracy in the machining of the blades or the body of the cutter unnecessary. Notches on the bottom of the blades fit over a stop pin in the body so that all blades can be easily positioned uniformly.

— 189 —

Taps, Ground, Flanders

Jones & Lamson Machine Co., Springfield, Vt. [Vol. 60,p.159.]

The shanks and thread forms of these taps are ground to accurate shape and



dimensions after the tools have been properly hardened. The pitch diameter is held to a tolerance of 0.0008 in. by the grinding process, and the lead error is held within plus or minus 0.0005 in. In ordinary materials the taps are intended to produce holes within the limits of the close fit determined by the National Screw Thread Commission. Standard taps can be furnished in sizes from ¼- to 1-in. in both the coarse and fine thread series. The overall lengths vary from 2½ to 5½ in. Special taps can be furnished if desired. The material used is high-speed steel and it is said that these tools will give better results than unground taps of the same material.

— 190 —

Diehead, Improved, H & G

Eastern Machine Screw Corp., Truman and Barclay Sts., New Haven, Conn. [Vol. 60,p.228.]

This improved line of dieheads provides a better means of adjustment for the length of thread cut. The

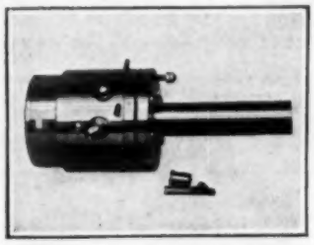


Fig. 1—Style CC diehead

style CC head is fitted with long guide pins, the locking pin being provided with an adjusting nut and lock nut. When the forward movement of the turret or tool holder ceases, the die continues to thread until the forward movement of the locking pin is stopped by the contact of the adjusting nut with the flange on the shank. The contact causes the diehead to open immediately. The closing of the head is automatically accomplished by the contact of a closing stud or lug with an overhanging arm

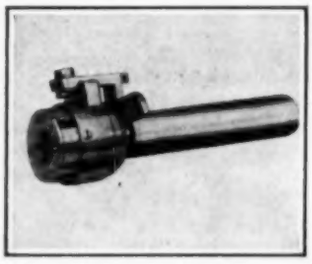


Fig. 2—Style D diehead

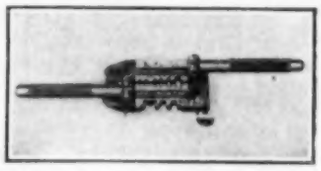
on the machine. This head is available in sizes ranging from ⅞ to 3 in. A style D head is furnished for cutting threads from ¼ to ⅞ in. in diameter and is especially adapted for use on Cleveland automatic screw machines.

— 191 —

Screw Plate, Adjustable

Zoerman-Clark Manufacturing Co., 7146 Carpenter St., Chicago, Ill. [Vol.60,p. 230.]

This device is so designed that several threads can be cut with one pair of dies and consists of a stock and two screw plates. Several dies are made in each screw plate so that threads from ¼- to ¾-in. can be cut, and square openings are also provided so that the tool can be used as a tap wrench. The stock is made in two sections, connected by a graduated aligning hinge at one end and a correspondingly graduated latch at the other. When set in the position shown in the illustration the tool is ready for use on small threads. When it is desired to use the larger dies, the thumbscrew is turned to release the latch, and the dies are reversed by swinging one half around the other on the hinge at the end. The design of the tool makes it possible to cut threads



close up to a shoulder and the die can be removed from a finished thread without backing off by turning the thumbscrew and opening the die.

— 192 —

Diehead, Type P

Murchey Machine & Tool Co., Detroit, Mich. [Vol.60, p.380.]

This is a self-opening diehead designed especially for use on Brown & Sharpe automatic screw machines. The head is closed by the projecting arm at the side which is

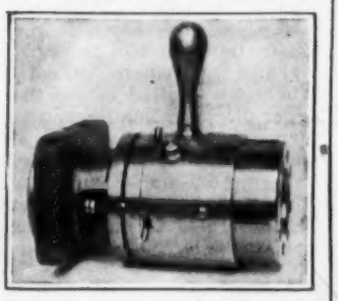
arranged to make contact with a suitable stop on the machine. The opening of the head at any predetermined point is controlled by the adjustable lug on top of the device. A feature of the device is the use of comparatively few parts in its construction, all of which are interchangeable. The chasers are made of high-speed steel and their close adjustment is convenient and easy. All working parts are hardened and ground. The chasers and other working parts of the head are inclosed and tipping of the chasers is prevented.

— 193 —

Diehead for Warner & Swasey Turret Lathes

Eastern Machine Screw Corp., New Haven, Conn. [Vol.60,p.563.]

This modification of the H & G style CC diehead is for use on Warner & Swasey



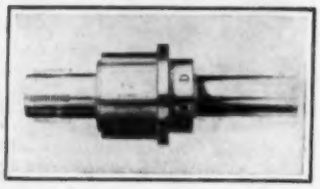
2-A and 3-A turret lathes. It is equipped with a special holder to fit the hollow hexagon turret of these machines, the holder being designed to bring the head close to the turret, so that it will operate with a minimum amount of overhang. A feature of the device is an adjustable pull-off arangement that makes it unnecessary for the operator to advance the turret exactly in accordance with the lead of the screw being cut. The advance of the turret may be considerably behind the advance of the diehead without affecting the lead of the thread.

— 194 —

Tap, Rotary, Collapsing Adjustable

Geometric Tool Co., New Haven, Conn. [Vol.60,p. 822.]

This tap is designed for use on hand or automatic drilling machines and multiple-spindle automatics, and is also adapted for a variety



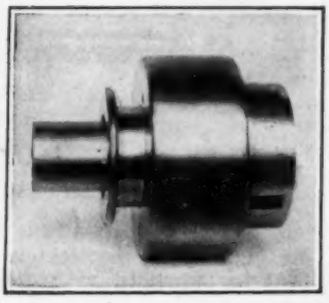
of other uses. It is equipped with a flange trip operated by the contact of the flange with closing forks or a collar attached to the machine. If it is desired to have the tripping of the tool controlled by the work, a plate trip is provided. The chasers can be expanded without slowing down or stopping the machine spindle. All parts subject to wear are hardened and ground and the chasers are removed by taking off the plate at the front.

— 195 —

Diehead, Style AA, H & G

Eastern Machine Screw Corp., Truman and Barclay Sts., New Haven, Conn. [Vol.60,p.904.]

This diehead is for use on such machines as the Acme automatic screw machines in which the die spindle rotates and the stock remains stationary. An accurate adjustment for the length of thread cut is provided and the auto-



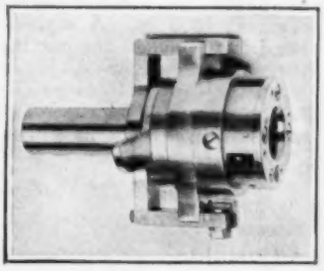
matic trip is positive in its action. The head is closed by compressive action caused by the backward movement of the die spindle. The outer shell of the device has a spool at the back for a yoke and, when the forward motion of this yoke is stopped, the head immediately trips. The backward movement of the yoke as the spindle recedes is arrested by a stop, closing the head in readiness for the next piece.

— 196 —

Diehead, Style D, Improved, H & G

Eastern Machine Screw Corp., Truman and Barclay Sts., New Haven, Conn. [Vol.60,p.983.]

This head is for use on Brown & Sharpe automatic screw machines and has recently been improved. Two arms from the floating shank,



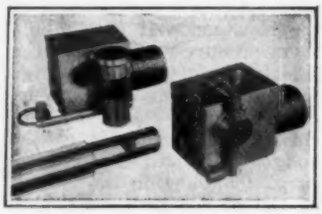
instead of one, provide a double drive effect that reduces friction and prevents any tendency to cramp while threading. This style of head is said to increase the production possibilities of the equipment and to produce threads of superior quality. The following sizes are available: $\frac{9}{16}$-in. for the No. 2 machine, $\frac{7}{16}$-in. for the No. 0 machine, and $\frac{1}{4}$-in. for the No. 00 machine.

— 197 —

Holder, Broach

Lapointe Machine Tool Co., Hudson, Mass. [Vol.60,p. 35.]

This holder is for attaching broaches to the drawheads of machines made by this company, has no loose parts and requires no manipulation by the operator to engage and release the broach. When the drawhead of the machine reaches the extreme outward position, the operator merely pushes the shank of the broach into the holder,



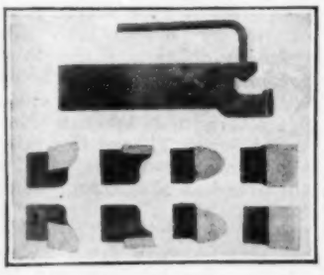
and as the shank enters the holder it rotates a cam-shaped roller against the tension of a spring. When the shoulder of the broach touches the holder a crosswise groove in the shank is directly under the roller, permitting the roller to snap back to its original position and hold the broach securely. To release the broach it is simply given a quarter turn in either direction, causing the roller to assume the same position that it has when the broach is entering, and the broach can then be withdrawn.

— 198 —

Tool Holder, Lindmark

Haffling Tool & Manufacturing Co., Bridgeport, Conn. [Vol.60,p.229.]

This tool holder is for use on lathes, boring mills and planers. It consists of a



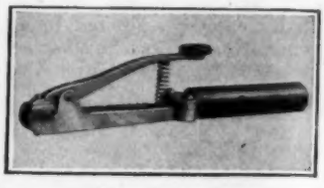
special shank with a recess in which the tool bits are clamped. The bits are shaped to fit the recess and a headless setscrew in a projection of the shank clamps the bit in position. Tool bits of high-speed steel or Stellite are furnished with the shank and with various shapes of cutting edge to suit the work to be done. To avoid slipping of the bit under the setscrew, two or three depressions are spotted in each bit to receive the point of the screw. Adjustment of the cutter in the shank may be made by moving it transversely and clamping it in the desired position. When it is necessary to grind the tool, it can always be replaced in the exact position that it formerly occupied without unclamping or changing the adjustment of the shank.

— 199 —

Electrode Holder, Welding

Gibb Instrument Co., Bay City, Mich. [Vol.60.p.307.]

This holder is particularly



designed to remain cool during long continued operation. The body is made of aluminum and the mechanical features will be evident from the accompanying illustration. The cable is clamped to the device directly in front of the handle and the spring is exposed so that it will not overheat and can be quickly changed. Renewable copper clamping jaws are provided and are conveniently inserted. The device weighs 15 ounces.

— 200 —

Toolholder, "Vise-Grip" Jacques

Central Tool Co., Auburn, R. I. [Vol.60,p.416.]

This holder is designed to hold short pieces of tool bits securely and effect a saving

of high-speed steel by using the bits entirely up. A style to hold a cutting-off

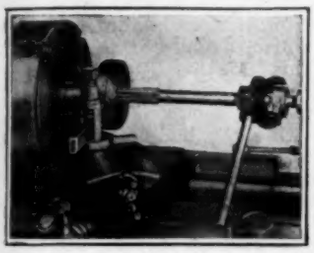
blade and a style for round, square or rectangular sections are furnished. With the latter style a variety of jaws are supplied so that round or square bits can be held at various angles. A single setscrew holds the jaw in place and acts as a clamp. When the setscrew is loosened the jaw can be easily pushed sideways out of the shank so that it is as easy to change a jaw as to change a bit.

— 201 —

Holder, Drill and Reamer

W. H. Nicholson & Co., Wilkes-Barre, Pa. [Vol.60,p. 944.]

This holder takes the place of the live center on the lathe and acts as dog, driver and hold-back. It can be



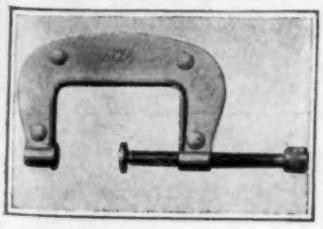
used in a drill press as well as the lathe, taking the place of the regular chuck. It can also be used in the turret lathe and screw machine as a floating reamer holder. Hardened steel plates are provided to line up the drills, and it is claimed that by the use of the device bell-mouthed holes are reduced to a minimum. It is furnished to fit any taper or straight shank up to 1¼ in. in diameter.

— 202 —

C-Clamp, Pressed Steel

Affa Specialty Co., 34 Southbridge St., Worcester, Mass. [Vol.60,p.35.]

The frame of this clamp is a single piece of steel blanked to shape, the center cut out, the edges around the opening turned down, and the piece folded upon itself in successive pressing operations. At the same time that the blank is made, holes are pierced to receive the rivets, and as the piece is folded it is wrapped around an arbor,



forming the bosses for the anvil and screw. Greater strength with reduced weight is claimed, as well as reduced cost due to the simplicity of the manufacturing operations.

— 203 —

Chuck, Self-Locking, Universal, Clare

A. C. Bellefleur & Son Co., 81 Hamilton St., New London, Conn. [Vol.60,p.155.]

This chuck is manufactured in Manchester, England, and is made up of three parts, the body, the collet, and the retainer. The main feature of the chuck is its self-locking quality, the torque applied to overcome the resistance of the drill causing the collet to grip the drill shank very tightly. The gripping action is caused by a left-hand thread on the collet, any relative motion be-

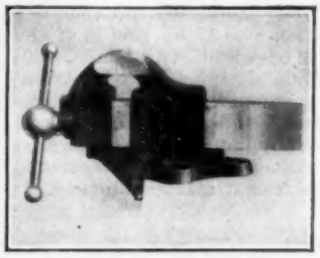
tween the chuck and the drill during the drilling operation tending to screw the collet down into the retainer. This causes a tighter grip of the collet and also tends to screw the retainer tighter on the body. The chuck is furnished in five sizes and will handle either taper or straight shanks with the proper collets.

— 204 —

Vise, Bench, "Simplex Gray"

Simplex Tool Co., Woonsocket, R. I. [Vol.60,p.158.]

This vise is exceptionally rugged and an important



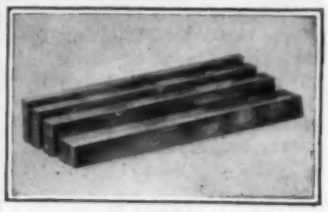
feature of its construction is the use of an all-steel slide. The body is cast from a tough grade of crucible iron and the jaws are of steel, hardened and ground. The vise screw is of steel and has square threads. It is retained by a cap in front of the sliding jaw so that it has been unnecessary to core the inside of the vise for a collar. The vise is furnished in sizes from 3- to 7-inch.

— 205 —

Parallels, Steel, Hardened and Ground

L. S. Starrett Co., Athol, Mass. [Vol.60,p.380.]

A special grade of tool steel is used in the construction of these parallels and they are hardened and



ground. The set consists of eight pairs of parallels and can be furnished in individual pairs, combination of pairs, or complete. The dimensions have been determined from experience to make the most practical combinations, and are all 6 in. long. The No. 1 set is shown in the accompanying illustration.

Miscellaneous Equipment and Supplies

— 206 —

Adding Machine, "Quixsum"

Precision Adding Machine Co., Gotham Bank Bldg., New York, N. Y. [Vol.60,p. 231.]

This is a fractional adding machine of exceptional simplicity and will add dimensions given in feet, inches, and fractions of an inch. Four dials are provided, the one at the right for adding fractions of an inch as small as thirty-seconds, and the others for inches, feet, and hundreds of feet, respectively. To operate a dial, the point of the stylus is inserted in the hole opposite the number to be added, and the dial is turned clockwise until the stylus strikes the stop. After all numbers and fractions have been added on the proper

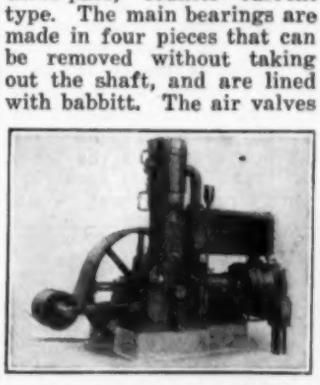
dials the answer can be read directly through the small slots at the left of the dials.

— 207 —

Compressor, Air, Angle-Compound

Sullivan Machinery Co., 122 South Michigan Ave., Chicago, Ill. [Vol.60,p.158.]

The low-pressure cylinder of this belt-driven, angle-compound compressor is located in the horizontal position, the high-pressure cylinder being placed vertically above the crankshaft. The connecting rods to both cylinders are attached to the same crank, the shaft passing through the frame and carrying the large belt pulley. The intercooler is mounted directly above the low-pressure cylinder and is of the three-pass, counter-current type. The main bearings are made in four pieces that can be removed without taking out the shaft, and are lined with babbitt. The air valves



are of the Sullivan double-wafer type for both intake and discharge. All moving parts are provided with positive, automatic lubrication and are entirely enclosed in the frame of the machine.

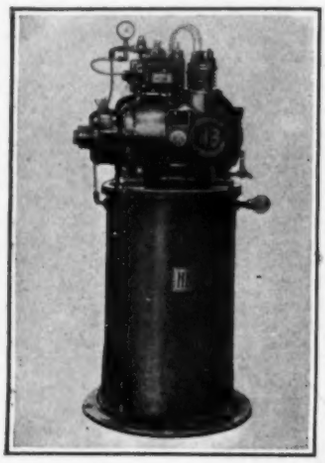
— 208 —

Compressor, Air, Automatic, HB

Hobart Bros. Co., Troy, Ohio. [Vol.60,p.602.]

This equipment consists of a motor-driven air pump and automatic switch, mounted on the top of a 30-gallon air tank. The compressor has two cylinders and runs at 400 r.p.m delivering 4 cu.ft.

of air per min. The unit operates on any lighting or power circuit. The automatic pressure switch starts the motor when the tank pres-



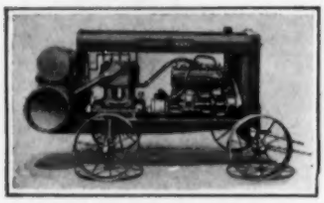
sure falls to 120 lb. per sq.in. and cuts it out again at 140 lb. per sq.in. An automatic valve control allows the motor to start under practically no load.

— 209 —

Compressor, Air, Portable

Ingersoll-Rand Co., 11 *Broadway, New York, N. Y.* [Vol.60,p.906.]

This compressor has a piston displacement of 60 cu.ft. per min., and is built on the lines of the larger portables of the same make. It embodies a duplex vertical compressor, direct-connected to a four-cylinder, four-cycle gasoline engine of the tractor type; enclosed construction; circulating water-cool-



ing system for both engine and compressor; compressor regulator and engine control for reducing speeds during unloaded periods; one-piece, cast-steel frame; sheet steel roof and removable side doors. The machine can be furnished mounted on steel wheels and axles; on wooden wheels with rubber tires; on a Ford truck; or on skids for mounting on a car or truck. It can also be furnished with electric motor drive in place of the gasoline engine. The machine being portable, it can be taken to any job where air is not available and can also be taken around the shop or yard.

— 210 —

Lacing Machine, Belt, "Trump"

C. I. Wroe Co., Room 1514, *Pershing Square Bldg., New York, N. Y.* [Vol.60,p.752.]

This machine not only attaches a helical steel wire lacing to the end of a belt, but is also used for making the coiled wire helix itself. A line of small holes is first punched along the edge of the end of the belt and the wire helix is then threaded through these holes. The belt is then transferred to the other side of the machine where the helix is flattened, so that a series of flattened loops project from the end

of the belt. The other end is then treated in the same way and the final connection is made by passing a rawhide pin through the loops. An arbor with a crank on one end has a slot at the other end, and the end of the wire from which the helix is to be made is passed through the slot. The slotted end is then passed into a threaded hole in the frame of the machine and revolved to wind the wire around the arbor and form a helix.

— 211 —

Relining Machine, Brake-Band

Kimball Garage, 139 *Ashmun St., New Haven, Conn.* [Vol.60,p.751.]

This device is for use in removing old linings from

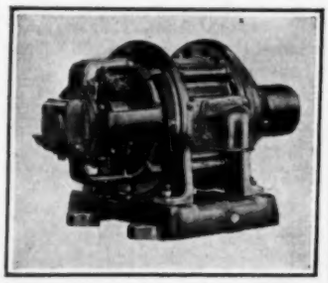
brake bands and replacing them with new linings. The device consists of a floor stand and column, having at the top a C-shaped frame with two stationary anvils fixed in the upper jaw and corresponding treadle-operated punch holders in the lower member. To remove the rivets from a worn lining, a punch is placed in the upper member and pressure upon the treadle raises the band against the punch, forcing out the rivet which falls through the tubular punch holder to the floor. The new lining is then placed in position and riveted after the holes for the rivets have been punched in the lining.

— 212 —

Motors, Single-Phase and Polyphase

General Electric Co., Schenectady, N. Y. [Vol.60,p.562.]

The type SCR single-phase motor shown in the illustration is built in sizes from ½ to 10-hp. The machine operates on the squirrel-cage induction principle and is designed to eliminate the short-circuiting switches, thus allowing a simple construction. The no-load and full-load speeds are about 3 per cent, respectively, above and below synchronous speed, giving close regulation for a motor of this type. The stator windings are simple concentric polar windings arranged for double voltage connections. The polyphase mo-



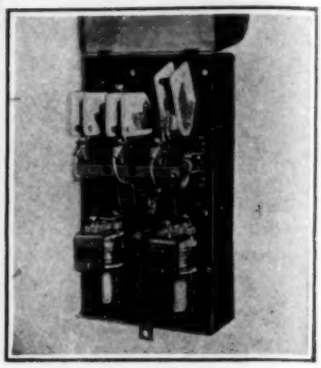
tor is furnished in capacities from ½ to 15 hp. and is of the three- and two-phase, 60-cycle design. The electrical improvements include reduced heating, higher efficiency and power factor at fractional and full loads, and increased starting torque.

— 213 —

Starters, Motor

Allen-Bradley Co., Milwaukee, Wis. [Vol.60,p.943.]

An across-the-line switch for use with push-button control is illustrated. It is available for use with squirrel-cage motors up to 25-hp. capacity at 220 volts, 35-hp.



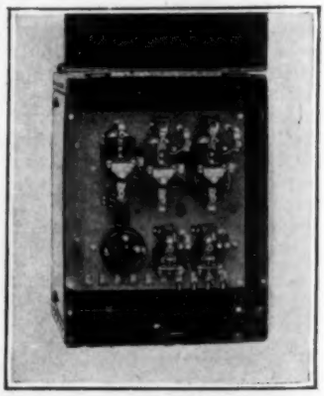
at 450-550 volts, and with self-starting polyphase motors up to 50 hp. A semi-automatic resistance starter is also included in the series. This device uses Allen-Bradley graphite resistors and the motor is started by lifting the handle quickly to mid-position, after which the handle is slowly lifted and the magnetic switch closes, throwing the motor on the line without opening the motor circuit. The automatic resistance starter model of the line is a push-button control starter for squirrel-cage motors.

— 214 —

Controller, Machine Tool, Magnetic

General Electric Co. Schenectady, N. Y. [Vol.60,p.944.]

These controllers employ the counter-emf. method of acceleration and are applicable to reversing and non-reversing constant and adjustable speed drives. They are adapted for d.c. motors in sizes up to 15-hp. The controller provides two ac-



celerating points. The starting resistance is automatically short-circuited in one step upon proper acceleration of the motor. This result is

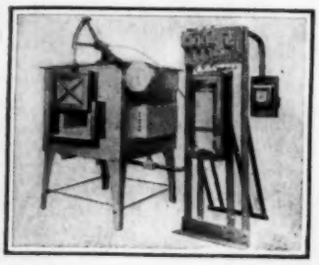
accomplished by an accelerating contactor whose closing is governed by the counter emf. of the driving motor of the tool.

— 215 —

Furnaces, Electrical, for Heat Treating, "Metco"

American Metallurgical Corp., 168 *Dartmouth St., Boston, Mass.* [Vol.60,p.228.]

These furnaces are built in a variety of sizes to suit the requirements of the general field of heat treating and carburizing, the hearth areas ranging from 12x24 in. to 4x8 ft. In the larger sizes



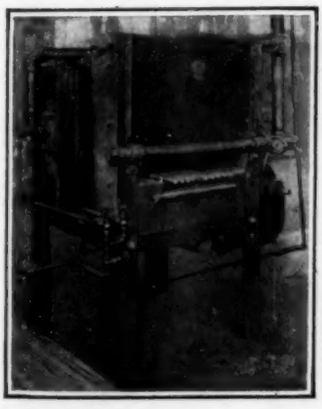
the framework is of structural steel shapes supporting a shell of steel plates which holds the insulating material around the heating chamber. The hearth is constructed of Crystolon tiles to resist abrasion from the work. The heating elements are of Chromel "A" alloy, the arrangement of the elements in the furnace being suited to the nature of the work to be done. A control panel carries the temperature regulating and recording instruments, together with the mechanism for automatically determining the duration of a heat.

— 216 —

Forge, "Economizer"

W. S. Rockwell Co., 50 *Church St., New York, N. Y.* [Vol.60,p.825.]

The feature of this forge is the installation of a blast



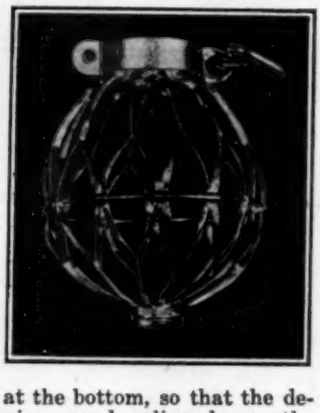
pipe above the furnace opening, from which a current of air is blown downward across the opening and into the front of the heating space. This blast provides a curtain of cool air between the flames of the furnace and the operator, deflecting the hot gases away from the entrance and against a preheater located just above the entrance. The effect of the blast is to induce a current of air past the operator and into the furnace, thus providing more comfortable working conditions. It is stated that the heating conditions for the metal are also improved.

— 217 —

Guard for Mill-Type Lamps, "Flexco-Lok"

Flexible Steel Lacing Co., 4607 *Lexington St., Chicago, Ill.* [Vol.60,p.306.]

This guard consists of two half-sections hinged together



at the bottom, so that the device may be slipped over the lamp and clamped to the socket. The device is made of soft, cold-rolled steel, blanked and expanded. The body is spot-welded to the collar and the whole guard is then tinned and assembled. The clamping screws are retained in the guard when it is opened and are loosened by means of a key.

— 218 —

Lamp Lock, Electric

Smith-Pearson Co., 10 *Twenty-second Ave., Paterson, N. J.* [Vol.60,p.640.]

This lock consists of a ring that fits over the top of the socket, to which is attached a heavy wire loop. The tip of the bulb is encased at the bottom of the loop and, when the loop and the ring are fastened together and sealed, it is claimed that the bulb cannot be removed without breaking the tip. If the bulb burns

out, the tip may be broken and the bulb unscrewed. The lock can be then disassembled and a new bulb put in place.

— 219 —

Cement "Redisc"

Charles H. Besly & Co., 118 *North Clinton St., Chicago, Ill.* [Vol.60,p.158.]

This waterproof powdered cement is used for quickly attaching abrasive disks to steel disk wheels. The disk is ready for use in approximately 15 minutes after it is applied. The steel wheel is first heated, after having the cement sprinkled over its surface, and the melting cement is spread evenly over the surface. The abrasive disk is then placed in position and the wheel is then placed in a press to cool. Worn out disks can be removed by heating until the cement melts. In this way abrasive disks can also be changed without injury to the one that is removed. The water-proof feature of the material makes it of use in wet grinding operations.

— 220 —

Tools, Cutting, "Jolite"

Jolite Tool Co., 610 *Sycamore St., Milwaukee, Wis.* [Vol.60,p.339.]

These tools are made of a high-production cutting material whose base is high-speed steel. The material is obtained by a process which is said to provide a "red hard" cutting edge and also stands up well when cold. It is stated that the "Jolite" process can be duplicated with exactness and that the product is exceptionally uniform. The steel is hardened clear through and it is unnecessary to give it any further heat treatment before using. Feeds and speeds used are the same as for high-speed steel. Among the advantages claimed are a keener cutting edge, additional strength, and resistance to wear.

— 221 —

Rodine Extract

American Chemical Paint Co., Ambler, Pa. [Vol.60,p.562.]

This liquid, when added to a pickling bath, is used to restrain the action of the acid on the metal without retarding its action in removing the scale. Dilute sulphuric acid, while removing the scale and rust, wastes a good deal of its strength in dissolving the cleaned metal. Rodine extract is used to prevent the acid from attacking the cleaned surface, to reduce the acid consumption without slowing up the pickling process, and to prevent the formation and escape of acid fumes from the bath. The quantity of the liquid used in a bath varies with conditions and is usually from one to ten gallons for each 100 gallons of concentrated sulphuric acid used.

— 222 —

Cement, "Lumnite"

Atlas Aluminate Cement Co., 25 *Broadway, New York, N. Y.* [Vol.60,p.787.]

Besides possessing the qualities of ordinary Portland cement, this material develops strength in twenty-four hours somewhat greater than that of Portland cement at 28 days. Structures may be put in service or machinery set on foundations twenty-four hours after pouring, and reconstruction or repair of concrete floors and structures can be completed ready for service over the week-end period. The raw materials used in this cement include a large percentage of high grade aluminum ore. It is used in the same way as Portland cement except that a somewhat wetter mix should be used.

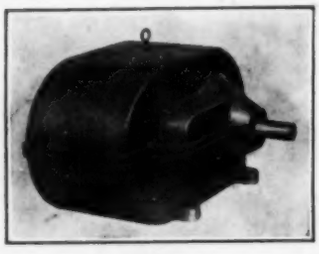
— 223 —

Speed Reducer, Mill-Type

Palmer-Bee Co., Detroit, Mich. [Vol.60,p.71.]

This speed reducer consists of a train of gearing, compounded to obtain the desired reduction and enclosed

in a cast-iron housing. The simplicity of the design permits the use of wide-face, coarse-pitch gears and all shafts are supported in bearings at either end. All parts are interchangeable and, as



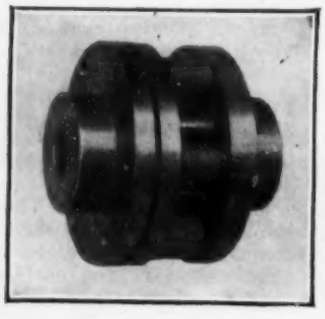
the housing of a reducer of a given size accommodates all ratios of gearing, the ratio can be increased or decreased by one set of gears for another. The housing is made in two parts and the lower half is strongly ribbed to prevent distortion. A combined splash and oil-bath system of lubrication is used. The horsepower ratings range from ¼ to 200 hp., and the ratios from 4 to 1 to 400 to 1. The reducer can be furnished with plain shaft ends or with flexible couplings, and with or without a motor drive mounted on a cast-iron base.

— 224 —

Coupling, Flexible, High-Speed

Palmer-Bee Co., Detroit, Mich. [Vol.60.p.154.]

This coupling is designed for use in coupling high-speed motors to speed reducers and consists of a pair of disks having round pins projecting from their adjacent faces, the pins being arranged so that a continuous belt can be passed over and under alternate pins. The arrangement forms a series of loops through which the driving torque is transmitted from one disk to the other. The use of the continuous belt in conjunction with the smooth round pins insures the equal distribution of the load over all the pins, and distributes the wear evenly over the length of the belt. One of



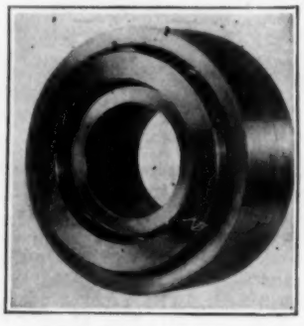
the disks has a slot in its periphery through which the pins pass. Each pin is grooved at the point where it passes through the slot and a steel spring is slipped into the slot when all the pins are in position, engaging the grooves and holding the pins in position.

— 225 —

Bearings, Roller, Jaeger

Oscar R. Wikander, 8 West 40th St., New York, N. Y. [Vol.60,p.307.]

These bearings are manufactured by the G. & J. Jaeger Co., Elberfeld, Germany, in plain and collar types, the collar type being shown in the accompanying illustra-



tion. The plain type has cylindrical rollers held in a heavy cage, and cylindrical inner and outer races. A set of side rings form shoulders that retain the rollers in position. Each roller in the collar type bearings has an enlarged section or collar at its center, these collars revolving between two outer and two inner races. These races are kept apart by intermediate rings, and the radial load of the bearing is transmitted by the portions of the rollers that project beyond the collars. The thrust of the shaft is transmitted from the inner race through the roller collars to the outer race on the other side of the bearing.

— 226 —

Couplings, Flexible, High-Speed and Pressed Steel, Francke

Smith & Serrell, Newark, N. J. [Vol.60,p.339.]

The high-speed type of coupling, Fig. 1, consists of two similar flanges to be fastened to the ends of the shafts, between which are fastened the flexibly connected drums. An inner drum is bolted to one flange

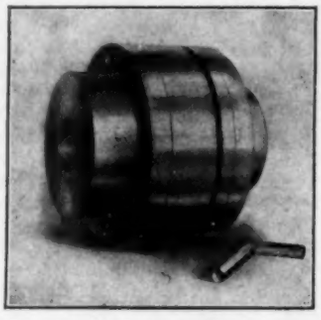


Fig. 1—High-speed coupling

and the outer drum to the other. Flexible laminated pins are disposed in radial holes in the inner drum and extend into slotted keepers which are located parallel to the shaft axis in the outer drum. The coupling is easily accessible for inspection and repair, and is built in sizes that will transmit up to 300 hp. per 100 r.p.m. and operate at 2,500 r.p.m. The pressed steel type, Fig. 2, is made for shafts up to ¾ in. in diameter and will transmit

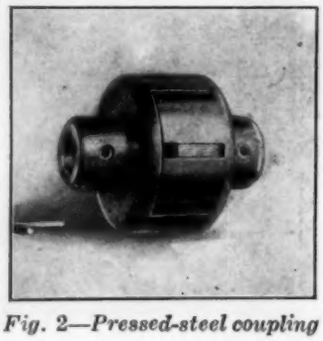


Fig. 2—Pressed-steel coupling

up to 1 hp. at 1,800 r.p.m. These couplings consist of two similar pressed steel flanges with a center spring cross disposed between them. Bores smaller than ¾ in. can be accommodated by means of bushings.

— 227 —

Bushings and Bearings, Self-Lubricating, Reliance

Metal Saw & Machine Co., 40 Napier St., Springfield, Mass. [Vol.60,p.565.]

These bushings and bearings were formerly made by the Reliance Machine Co. of

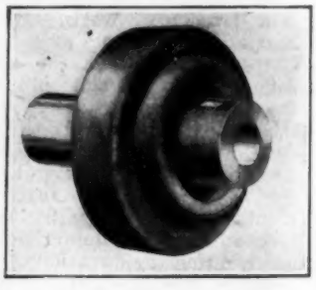
Boston, the present company having made some improvements that tend to increase the durability and satisfactory service of the product. The bearings are made in many styles and designed for a multiplicity of uses. Staggered holes are drilled in the body and compressed plugs of lubricating compound are inserted in the holes by a method which is claimed to give a pressure resistance equal to that of the metal itself.

— 228 —

Bushing, Pulley, Loose, "Gast"

Standard Pressed Steel Co., Jenkintown, Pa. [Vol. 60,p.602.]

This device has two parts, an oil reservoir with a hub that can be fastened to the shaft by means of a setscrew, and a bushing that is pressed into the loose pulley. The bushing section extends into the reservoir section where the neck of the bushing has a rectangular opening through it to the shaft. An endless chain is suspended from the neck and dips into the oil. As the loose pulley revolves a steady



stream of oil is carried to the bushing by the chain and passes through the rectangular opening to the shaft at each revolution of the pulley. The reservoir is filled through the annular opening until the level of the oil reaches the gauze dust guard.

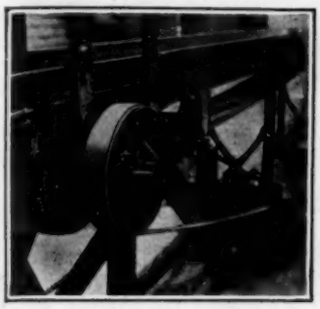
— 229 —

Pulley, Reduction, Speed

Parker Machine Works, Riverside, Calif. [Vol.60,p. 674.]

This speed reduction device is of the planetary-gear type and all the gearing is contained within the pulley itself. A spur gear is mounted loosely on the shaft and extends into the shaft bearing where it is secured by a key. A double internal

gear meshes with this spur gear and is held in an eccentric socket in the body of the pulley. The other section of the internal gear meshes with another spur gear that



is keyed to the shaft. The body of the pulley has a flange for the driving belt. The reduction of speed effected by the pulley shown in the illustration is 625 to 1, and other ratios may be obtained by the proper proportioning of the ratio of the gears. For lubrication the gear is filled with oil.

— 230 —

Bearing, Self-Lubricating, U. S. L.

Universal Self Lubricating Bearing Corp., Lincoln, N. J. [Vol.60,p.903.]

The shell of this bearing is made of hard maple and is impregnated with lubricating oil. The grooves for the bab-

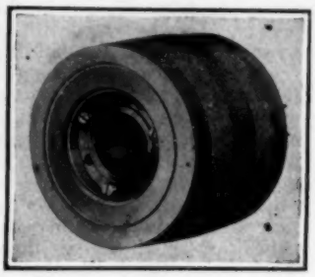
bitt are cut in the bore of the shell and the babbitt is then cast in the grooves. The inside of the bearing is then reamed to the proper size and presents alternating areas of wood and babbitt. The babbitt reinforcing core is said to decrease the effect of atmospheric conditions on the wood shell and to add substantially to the strength and durability of the bearing.

— 231 —

Pulley, Motor

Dodge Manufacturing Corp., Mishawaka, Ind. [Vol. 60,p.904.]

This pulley has a wood rim and an iron center. The wood rim is made of selected stock, laid up in segments and glued together under heavy pressure. A seamless steel tube is forced into the wood rim and securely locked. An iron bushing, slit longitudinally and tapered at each end, and two iron wedge rings complete the equipment. The wedge rings are drawn together by screws, clamping the split bushing



tightly on the shaft and pressing the wedge rings into the steel tube in the pulley rim. Keys or setscrews are not needed to hold the pulley securely on the motor shaft.

— 232 —

Bushings, Jig, Standard, "Universal"

Universal Sales Corp., 12141 *Cardoni Ave., Detroit, Mich.* [Vol.60,p.827.]

These bushings are adapted for use in drilling and reaming operations and are furnished in three parts, including the bushing proper, the liner, and a detachable knurled head. The bushing proper is made of tool steel and is hardened and accurately ground. The bushing is held in the liner by a

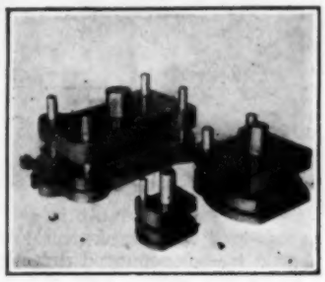
bayonet-type lock, that holds it securely against turning but is released by giving the bushing a part of a turn to the left. These bushings are carried in stock in 192 sizes ranging from a No. 55 drill to 2 in. Five different lengths are furnished for all sizes up to the ½-in., the larger sizes being furnished in six lengths. The advantages claimed for these standardized parts are low cost, accuracy and interchangeability.

— 233 —

Die-Sets, Standard

Bilton Machine Tool Co., Bridgeport, Conn. [Vol.60,p. 902.]

These die-sets are being marketed to relieve the toolroom of the necessity of making up such sets every time a new die and punch is designed. The die bed and punch holder are made of semi-steel, the guide pins being of carbon steel, carefully hardened, ground and lapped. The punch holders may have permanent round



or square stems for attaching them to the gate of the press in which they are to be used, or they may be fitted with floating shanks so that the tools are guided entirely by the pins of the die-set. Six standard sizes of sets are made and carried in stock in 53 sizes. Six special styles with a range of 40 sizes can be furnished on order.

— 234 —

Stools, Factory, Welded

Pollard Bros., 4034 *N. Tripp Ave., Chicago, Ill.* [Vol.60,p.602.]

The various types of these stools include various heights with no height adjustment, a non-adjustable stool with swivelling seat and stools with height adjustment. The frames are constructed of ¾x¾x¼-in. steel angles and all joints are welded by the arc or oxy-acetylene processes.

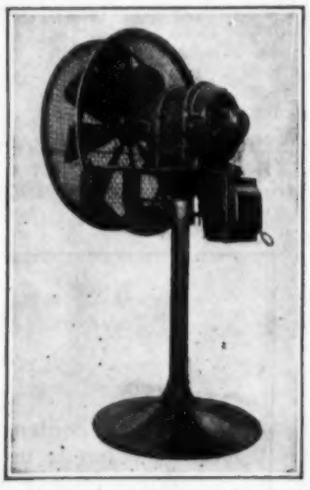
The cross braces are welded into the frames and two braces are fitted to stools more than 28 in. in height. The seats are of hard wood and back rests can be furnished. The swivel is of malleable iron and has a long bearing. The height adjustment is made by means of auxiliary angles fastened to the legs of the stools by machine screws.

— 235 —

Fan, "Man Cooler"

Garden City Fan Co., McCormick Building, Chicago, Ill. [Vol.60,p.72.]

This is a self-contained ventilating unit, for use wherever workmen are exposed to excessive high temperatures or direct heat radiation. A fan with adjustable blades is mounted on the shaft of a constant-speed motor attached to a cast-iron bracket at the top of a pedestal. The bracket is arranged to swivel on the pedestal, so that the current of air from the fan may be directed to suit the conditions, and a clamp is pro-



vided to hold the fan in position when adjusted. The guard for the fan and the starter for the motor are also attached to the swivelling bracket. The base of the pedestal is heavy and has sufficient spread so that the machine stands solidly on the floor. The volume of air delivered may be varied by adjusting the angle of the blades of the fan.

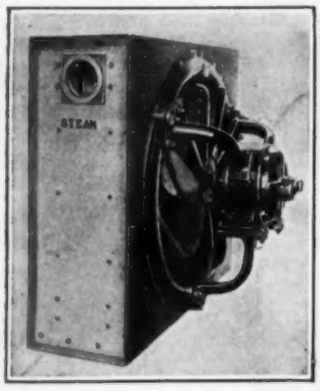
— 236 —

Heater, Unit, "Venturafin"

American Blower Co., Detroit, Mich. [Vol.60,p.525.]

For heating service in industrial buildings and warehouses, this is an exception-

ally compact device and is adapted to a variety of installation requirements. The pipes of the steam coils are straight copper and brass tubes about which copper ribbons are wound, forming



continuous helical fins. The fins increase the heating area of the tubes and make possible the compactness of the unit. The tubes are arranged in three rows and staggered, the ends being fastened in copper headers. The pipes and headers will stand a steam pressure of 50 lb. per sq.in. The air is forced through the heater by a standard, motor-driven "Ventura" fan.

— 237 —

Fan, Man-Cooling, Ventura

American Blower Co., Detroit, Mich. [Vol.60,p.789.]

This apparatus is built in two sizes with wheels 21¼ and 37¼ in. in diameter, respectively. The smaller fan operates at 1,725 r.p.m. and is equipped with a 1-hp. motor, the larger size being driven at 1,120 r.p.m. by a 4-hp. motor. The device is strongly built and runs at a slow speed that tends to give a long period of service for

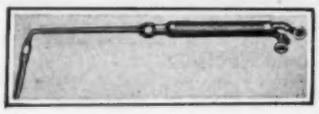
the outfit. The unit is self-contained with the switch and starting-box mounted directly below the motor, and can be placed in any desired position around the plant. The rotating fan is guarded by a heavy wire screen attached to the frame.

— 238 —

Torches, Welding, Gooseneck, Rego

Bastian-Blessing Co., 246 E. Ontario St., Chicago, Ill. [Vol.60,p.485.]

These torches are guaranteed against flashback and the objectional feature of mixing in the handle is eliminated. A wide range of tips is available, the tips being of the nickel-copper heat-resisting type. The torches are furnished in three models of which the largest is the model GL, suitable for any welding from the heavy preheated jobs to light sheet metal work. The next smaller model, GM, can be used for work up to 1 in. thick and is adapted for such work as pipe welding, automotive repair and production and other types of medium welding. The model GS is limited in its use to ⅛-in. stock and is suitable for light production welding work.



— 239 —

Tip, Cutting, Oxy-Acetylene

Alexander Milburn Co., Baltimore, Md. [Vol.60,p. 638.]

This improved device is known as the Super tip, and is a mixing tip with desirable features. A renewable seat is provided so that it is unnecessary to machine or discard used tips. The renewable seat also facilitates the cleaning and maintenance of the tip. The mixing of the preheating gases takes place in the multiple passages of the seat, from which they pass to an annular passage where they are given a swirling motion and additional mixing. From the annular passage the gases are expanded into enlarged multiple passages leading to the orifices in the tip proper. It is claimed that the use of this tip gives a speedier cut, a narrower kerf, and a material saving of gases over the former design.

— 240 —

"Taperod"

Electric Arc Cutting & Welding Co., 152-158 Jelliff Ave., Newark, N. J. [Vol. 60,p.905.]

This tapered electrode is designed to be gripped in the electrode holder by its larger end so that the smaller end may be used to start the arc. As the heat builds up during the process of welding, the constant and uniform increase in the thickness of the electrode provides heat compensation. The object of the tapered rod is to make it possible for the welding to be carried on with uniformity without the necessity of changing to a heavier rod as the heat increases. It is claimed that the tapered rod permits increased speed and greater deposition. Waste ends of the electrodes are reduced because the "Taperod" does not become red hot as it gets short.

How to Use the Index

THE contents page preceding the review pages is useful for locating a particular type of machine or appliance, the products being grouped according to type.

If it is desired to find what developments have been made by a certain concern, the following pages will be of value, as they give an index of the manufacturers for whom new products have been described in the *American Machinist* during the past six months. The index serves to show the activities of manufacturers in bringing out new products, as it offers a résumé of the developments.

In the index, the names of the manufacturers are placed in alphabetical order, and under the name of each can be found the product or products treated in the review pages. The number of the page on which the story appears is given to aid in finding the location of the article. The number of the item is placed after each product.

Looking over a few new machines or tools from week to week does not give one the perspective of the development of the machine tool. On the other hand, looking at all the things brought out in the last half year does give such a perspective. Developments come rapidly nowadays and a half year is time enough to indicate the trend. The Shop Equipment Review is the ready means of comparing and recording them. It is not a substitute for the Shop Equipment News Section or the advertising pages but a periodical compilation of the information contained in them.

The condensed descriptions and illustrations are intended to give the reader a good general idea of each product. For further details the description appearing in Vol. 60 of the *American Machinist* on the page referred to at the head of each item should be consulted.

Index of Manufacturers

	No.	Page
Affa Specialty Co., 34 Southbridge St., Worcester, Mass. Pressed steel C-clamp	202	123
Ajax Manufacturing Co., Cleveland, O. Rocker type drop-lock for forging machines..	134	113
Allen-Bradley Co., Milwaukee, Wis. Motor starters	213	124
American Blower Co., Detroit, Mich. "Venturafin" unit heater	236	127
"Ventura" man-cooling fan	237	128
American Chemical Paint Co., Ambler, Pa. Rodine extract	221	125
American Crusher & Machinery Corp., 1 Madison Ave., New York, N. Y. Chip crusher	133	113
American Electric Fusion Corp., 2610 Diversey Ave., Chicago, Ill. A. E. F. motor-driven spot welder	151	115
American Metallurgical Corp., 168 Dartmouth St., Boston, Mass. "Metco" electrical furnaces for heat treating	215	125
American Numbering Machine Co., 224 Shepherd Ave., Brooklyn, N. Y. Metal numbering machine	137	113
American Tool Works Co., Cincinnati, Ohio. 36-in. heavy pattern lathe	65	101
Ames, B. C., Co., Waltham, Mass. Dial gage with bezel lock	156	116
Anderson Bros. Manufacturing Co., Rockford, Ill. Jib-type scraping machine	149	115
Atlas Aluminate Cement Co., 25 Broadway, New York, N. Y. "Lumnite" cement ..	222	125
Barnes Drill Co., 820 Chestnut St., Rockford, Ill. Self-oiling, all-geared drilling and tapping machine	8	92
Jig-handling attachment for gang drill..	25	95
No. 263 drilling and tapping machine ..	9	92
Automatic drilling and tapping machines	10	92
Barr, H. Edsil, Erie, Pa. Hydraulic press	100	107
Bastian-Blessing Co., 246 E. Ontario St., Chicago, Ill. Rego welding torches....	238	128
Bausch & Lomb Optical Co., Rochester, N. Y. Metallographic equipment	160	117
Bellefleur, A. C., & Son Co., 81 Hamilton St., New London, Conn. Clare universal self-locking chuck	203	123
Bemis, E. W., Machine Co., Worcester, Mass. Milling fixture	91	105
Besly, Charles H., & Co., 118 N. Clinton St., Chicago, Ill. Coil spring grinding machine	26	95
"Redisc" cement	219	125
Betts Machine Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. Car wheel boring machine	1	91
Combination journal-truing and axle lathe	77	103
100-in. double vertical boring mill	2	91
Large heavy-duty planer	92	106
Special planer-type slotter	97	106
Improved car wheel boring machine ..	4	91
Bickford, O. S., & Son Co., 243 Silver St., Greenfield, Mass. Pipe tap thread milling machine	110	109
Bicknell-Thomas Co., Greenfield, Mass. Vertical tapping machine	108	108
Bilton Machine Tool Co., Bridgeport, Conn. "New Tip" soft metal hammer	182	120
Standard die-sets	233	127
Bisgood, A. C., 286 Cortland Ave., Bridgeport, Conn. Portable drilling outfit.....	21	94
Black & Decker Manufacturing Co., Towson Heights, Baltimore, Md. No. 3 electric screwdriver	150	115
Blanchard Machine Co., 64 State St., Cambridge, Mass. Special No. 27-R surface grinder	36	96
Borden Co., Warren, Ohio. Beaver square-end pipe cutter	140	114
Brown & Sharpe Mfg. Co., Providence, R. I. No. 2-I universal grinding machine	32	96
Semi-automatic table attachment	89	105
Budd-Ranney Engineering Co., 44 E. Chestnut St., Columbus, Ohio. Heavy-duty automatic bar machine	71	102
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y. Improved shear, punch and bar cutter	143	114
Improved bar cutter	144	114
Railroad shear, punch and bar cutter ..	145	115
Bullard Machine Tool Co., Bridgeport, Conn. 10-in. 6-spindle "Contin-u-matic"	74	103
Campbell Auto Works, 232 N. El Dorado St., Stockton, Calif. Cylinder hone	54	99
Carpenter Engineering & Machine Co., 522 Corn Exchange Bldg., Minneapolis, Minn. Disk grinder	28	95
Central Tool Co., Auburn, R. I. Jacques vise-grip tool holder	200	122
Chicago Pneumatic Tool Co., 6 East 44th St., New York. No. 36 Red Giant air drill..	23	94
Chisholm-Moore Manufacturing Co., Cleveland, Ohio. Moore I-beam trolley	173	119
Cincinnati-Bickford Tool Co., Cincinnati Ohio. 21-in. direct-drive drilling machine	11	92
Cincinnati Electrical Tool Co., 1501 Freeman Ave., Cincinnati, Ohio. 5-hp. heavy-duty floor grinder	40	97
Cincinnati Lathe & Tool Co., 3207-3211 North St., Cincinnati, Ohio. 30-in. geared-head lathe	60	100
Cincinnati Shaper Co., Cincinnati, Ohio. Toolroom shaper	95	103
Cisco Machine Tool Co., Cincinnati, Ohio. Geared-head lathe	66	101
City Engineering Co., Fourth & St. Clair Sts., Dayton, Ohio. Bolender gear grinding chucks	57	100
Clark Tructractor Co., Buchanan, Mich. "Duat" Tructractor	166	118
Cleveland Armature Works, 4732 St. Clair Ave., Cleveland, Ohio. Heavy-duty grinder	41	97
High-speed polishing machine	141	114
Cleveland Automatic Machine Co., Cleveland. Three-speed automatic screw machine..	69	102
Hopper-type magazine	79	103
Cleveland Pneumatic Tool Co., Cleveland, Ohio. Portable grinder	56	100
Cleveland Punch & Shear Works Co., Cleveland, Ohio. Combination punch, shear and forming press	142	114
Consolidated Tool Works, Inc., 296 Broadway, New York, N. Y. No. 12 hand drill ..	22	94
Crescent Truck Co., Lebanon, Pa. Industrial crane truck	165	118
Heavy three-wheel tractor	168	118
Curtis & Curtis Co., 900 Railroad Ave., Bridgeport, Conn. Forbes portable pipe cutting and threading machine	113	109
Curtis Machine Co., P. O. Box 44, Worcester, Mass. Motor-driven oil extractor.....	131	112
Cushman Chuck Co., Hartford, Conn. "Triplex" chuck	81	104
Davis & Thompson Co., 253 Reed St., Milwaukee, Wis. "Rotormatic" boring and facing machine	6	91
Automatic pipe cutter	139	114
DeWalt Manufacturing Co., Leola, Lancaster, Pa. "Dew-All" woodworking machine	175	119
Diamond Machine Co., Providence, R. I. 18-in. face grinding machine	30	96
Motor-driven swing-frame grinder	51	99
Dodge Manufacturing Corp., Mishawaka, Ind. Motor pulley	231	127
Dreses Machine Tool Co., Cincinnati, Ohio. 6-ft. ball-bearing radial drilling machine	12	93
Eastern Machine Screw Corp., New Haven, Conn. H & G improved diehead.....	190	121
H & G diehead for Warner & Swasey turret lathes	193	122
H & G style AA diehead	195	122
H & G improved style D diehead	196	122

	No.	Page
Electric Arc Cutting & Welding Co., 152 Jelliff Ave., Newark, N. J. Universal electric welding machine	152	116
"Taperod"	240	128
Elmes, Charles F., Engineering Co., Morgan and Fulton Sts., Chicago, Ill. Multi-pressure marking and stamping press	99	107
Elwell-Parker Electric Co., Cleveland, Ohio. "Hi-Lo" tructor	164	117
Ever-Grip Wrench Co., 129 South LaSalle St., Chicago., Ill. "Ever-Grip" nut and pipe wrenches	180	120
Federal Products Corp., 15 Elbow St., Providence, R. I. 0.0001-in. dial gage	154	116
Dial comparator	155	116
Model 22 thickness gage	157	116
No. 50 dial indicator	158	117
Ferner, R. Y., Co., 1410 H St., N. W., Washington, D. C. Societe Genevoise drilling attachment for small holes	7	92
Societe Genevoise 30-deg. precision machine level	159	117
Flexible Steel Lacing Co., 4607 Lexington St., Chicago, Ill. "Flexco-Lok" guard for mill-type lamps	217	125
Foote-Burt Co., Cleveland, Ohio. Axle drilling machine	19	94
Forbes & Myers, 172 Union St., Worcester, Mass. Model 106 tool grinder	42	97
Foster, Walter H., Co., 50 Church St., New York, N. Y. Bolt turning machine	124	111
Foster-Johnson Reamer Co., Elkhart, Ind. Reamer sharpener	55	100
Fox Machine Co., Jackson, Mich. Special drilling and tapping machines	15	93
Gallmeyer & Livingston Co., Grand Rapids, Mich. "Grand Rapids" universal cutter and tool grinder	48	98
Garden City Fan Co., McCormick Bldg., Chicago, Ill. "Man-Cooler" fan	235	127
Gardner Machine Co., Beloit, Wis. No. 27 double-spindle disc grinder	27	95
Garvin Machine Co., Spring and Varick Sts., New York, N. Y. Roller-bearing automatic tapping machine	109	109
Gaterman, W., Manufacturing Co., Manitowoc, Wis. Single-spindle automatic tapper	106	108
General Electric Co., Schenectady, N. Y. Portable arc welder	153	116
Single-phase and polyphase motors	212	124
Magnetic machine tool controller	214	124
Geometric Tool Co., New Haven, Conn. Adjustable collapsing rotary tap	194	122
Gibb Instrument Co., Bay City, Mich. Welding electrode holder	199	122
Giddings & Lewis Machine Co., Fond du Lac, Wis. "Tero" hand-operated internal grinding machine	34	96
Gould & Eberhardt, Newark, N. J. Shaper improvements	96	106
No. 16-HS gear hobbing machine	118	110
No. 72-H automatic gear hobber	120	111
Grant Manufacturing & Machine Co., 85 Silliman Ave., Bridgeport, Conn. Drilling and countersinking machine	16	93
Double-end chamfering machine	116	110
Greenlee Bros. & Co., 12th St. and Columbia Ave., Rockford, Ill. Multiple-spindle drilling machines	18	94
Grinder Sales Co., 526 West Fort St., Detroit, Mich. Hutto cylinder bore grinder	52	99
Haffling Tool & Manufacturing Co., Bridgeport, Conn. Lindmark tool holder	198	122
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill. Plunger suspension for Hanna riveting machines	146	115
Die screw adjustment	148	115
Harris Engineering Co., Bridgeport, Conn. No. 160 hob sharpening machine	46	98
Heald Machine Co., Worcester, Mass. No. 73 motor-driven grinding machine	31	96
Heller Bros. Co., Newark, N. J. Shock absorber hammer	181	120
Hendey Machine Co., Torrington, Conn. No. 2-G geared-head milling machine	84	104
Improved feed mechanism for shaper	93	106
Hercules Manufacturing Co., 446 East Woodbridge St., Detroit, Mich. Sub-press broaching fixture	105	108
Heston & Anderson, Fairfield, Iowa. H & A woodworking cut-off saw	176	119
Hisey-Wolf Machine Co., Cincinnati, Ohio. Wide-swing grinder	39	97
Hisey 6-in. two-wheel bench grinder	49	99
Hobart Bros. Co., Troy, Ohio. HB automatic air compressor	208	123
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago, Ill. Thor reversible tapping machine	107	108
Ingersoll Milling Machine Co., Rockford, Ill. Cylinder boring and reaming machine	5	91
Ingersoll-Rand Co., 11 Broadway, New York, N. Y. Size D pneumatic drill	24	95
Heavy air motor hoists	170	118
Portable air compressor	209	124
Jolite Tool Co., 610 Sycamore St., Milwaukee, Wis. "Jolite" cutting tools	220	125
Jones & Lamson Machine Co., Springfield, Vt. Flanders ground taps	189	121
Keuka Industries, Inc., Hammondsport, N. Y. Young tool grinder	43	98
Kimball Garage, 138 Ashmun St., New Haven, Conn. Brake band relining machine	211	124
Kopf, M. G., 612 Schwind Bldg., Dayton, Ohio. Cleaning machine for polishing wheels	129	112
Lambert Tool Co., East 55th St. and Euclid Ave., Cleveland. Expansion reamers	186	120
Landis Machine Co., Waynesboro, Pa. 20-in. pipe threading and cutting machine	111	109
Landis Tool Co., Waynesboro, Pa. Hydraulic-traverse grinding machine	33	96
Lapointe Machine Tool Co., Hudson, Mass. Broach holder	197	122
LeBlond, R. K., Machine Tool Co., Cincinnati, Ohio. 17-in. rapid production lathe	59	100
Heavy-duty portable lathes	61	101
11-in. cone-driven rapid production lathe	62	101
Geared-head sliding-bed gap lathe	73	102
Self-spacing lead screw supports	80	104
Rapid traverse for 17-in. lathe	82	104
Lewis-Shepard Co., 568 East First St., Boston, Mass. Electric power stacker	169	118
Lodge & Shipley Machine Tool Co., Cincinnati, Ohio. "Duomatic" lathe	68	102
Luther Grinder Manufacturing Co., Milwaukee, Wis. No. 177 railway grinder	53	99
Marquette Tool & Manufacturing Co., 319 W. Ohio St., Chicago, Ill. Pneumatic double-draw die cushions	104	108
McKenzie Engineering Co., New Rochelle, N. Y. Screw machine product and chip separator	132	113
Metal Saw & Machine Co., 40 Napier St., Springfield, Mass. Reliance self-lubricating bushings and bearings	227	126
Milburn, Alexander, Co., Baltimore, Md. Oxy-acetylene cutting tip	239	128
Minster Machine Co., Minster, Ohio. Front axle drilling machine	17	94
Modern Tool Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. Face milling cutter	188	121
Monarch Machine Tool Co., Sidney, Ohio. Friction head manufacturing lathes	63	101
Morris Machine Tool Co., Court and Harriet Sts., Cincinnati, Ohio. Geared-head lathe with cabinet legs	64	101
Mummert-Dixon Co., Hanover, Pa. No. 475 oilstone tool grinder	47	98
Murchey Machine & Tool Co., Detroit, Mich. Type P diehead	192	121
Myers Machine Tool Co., Mt. Clemens, Mich. Automatic broachine machine	115	110

	No.	Page
National Acme Co., Cleveland, Ohio. ⅜-in., model C automatic screw machine	70	102
Gridley 4½-in. chucking machine	76	103
National Electric Manufacturing Co., Pittsburgh, Pa. "Syntron" type F hammer	134	113
New Britain Machine Co., New Britain, Conn. "New-Matic" chucking machine	75	103
New England Sales & Engineering Co., 4 Walnut St., Worcester, Mass. "Notadent" soft metal hammer	183	120
New Jersey Foundry & Machine Co., 90 West St., New York, N. Y. Portable service elevator	171	119
Newton Machine Tool Works of the Consolidated Machine Tool Corp. of America, Wilmington, Del. Planetary type radius milling machine	86	105
Heavy-duty column facing machine	117	110
Niagara Machine & Tool Works, 637 Northland Ave., Buffalo, N. Y. No. 510-T trimming press	101	107
72-in. power folder and brake	127	112
Nicholson, W. H., & Co., Wilkes-Barre, Pa. Drill and reamer holder	201	123
Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. 58-in. locomotive rod milling machine	85	104
Nilson-Miller Corp., Hoboken, N. J. Prossen disk wheel straightening machine	103	107
Noble & Westbrook Manufacturing Co., Hartford, Conn. Dial-feed marking machine	136	113
Flange marking machine	138	113
Oilgear Co., 398-408 Thirty-eighth St., Milwaukee, Wis. Hydraulic riveter	147	115
Palmer-Bee Co., Detroit, Mich. Mill-type speed reducer	223	125
High-speed flexible coupling	224	126
Parker Machine Works, Riverside, Calif. Speed reduction pulley	229	126
Pollard Brothers, 4034 N. Tripp Ave., Chicago, Ill. Welded factory stools	234	127
Porter-Cable Machine Co., 1708 N. Salina St., Syracuse, N. Y. Two-speed bandsaw	177	119
Pottstown Machine Co., Pottstown, Pa. 6-in. valve reaming and tapping machine	121	111
Pratt & Whitney Co., 111 Broadway, New York, N. Y. 13-in. model B lathe	67	101
5-in. production hand milling machine	88	105
Precision Adding Machine Co., Gotham Bank Bldg., New York, N. Y. "Quixsum" adding machine	206	123
Production Machine Co., Greenfield, Mass. Finishing machine for flat work	37	97
Rachard, G., 504 E. 17th St., New York, N. Y. "Twin Head" boring bar	184	120
Riverside Production Co., Newark, N. J. Manhattan swing-frame grinder	50	99
Rockford Milling Machine Co., Rockford, Ill. Sundstrand double-spindle production milling machine	87	105
Rockwell, W. S., Co., 50 Church St., New York, N. Y. "Economizer" forge	216	125
Rotary File Co., 1570 Richton Ave., Detroit, Mich. Rotary files	185	120
Rubwood Wheel Co., Monson, Mass. "Rubwood" industrial truck wheels	174	119
Ryerson, Joseph T., & Son, Inc., Chicago, Ill. No. 5 high-speed friction saw	122	111
S & S Machine Works, 4522 Lexington St., Chicago, Ill. Beading, curling and trimming machine	125	111
Safety Tool Corp., 124 E. Moulton St., Watertown, N. Y. "Skroo-Zon" file handle	178	120
Scherr, George, 143 Liberty St., New York, N. Y. Microphotographic attachment for Zeiss portable microscope	161	117
Sellers, William, & Co., Philadelphia, Pa. Driving box boring and facing machine	3	91
Sellew Machine Tool Co., Pawtucket, R. I. Continuous driller	14	93
Sigourney Tool Co., Hartford, Conn. Two-spindle high-speed drilling machine	13	93
Simplex Tool Co., Woonsocket, R. I. "Simplex Gray" bench vise	204	123
Smith-Pearson Co., 10-22nd Ave., Paterson, N. J. Electric lamp lock	218	125
Smith & Serrell, Newark, N. J. Francke high-speed and pressed steel couplings	226	126
Sommer & Adams Co., 18511-18 Euclid Ave., Cleveland, Ohio. Multiple-spindle spline hobbing machine	119	110
Stamets, William F., Jenkins Arcade Bldg., Pittsburgh, Pa. Three-way horizontal drilling machine	20	94
Davis "Roto-Matic" pipe threader	114	109
Standard Pressed Steel Co., Jenkintown, Pa. "Gast" loose pulley bushing	228	126
Stark Tool Co., Waltham, Mass. Vertical milling attachment	90	105
Starrett, L. S., Co., Athol, Mass. Oil gaging tape	162	117
Hardened and ground steel parallels	205	123
Stevens & Co., 375 Broadway, New York, N. Y. "Spintite" socket wrench	179	120
St. Louis Machine Tool Co., St. Louis, Mo. "St. Louis" and "Western" grinders	45	98
Stockbridge Machine Co., Worcester, Mass. 32-in. heavy-duty crank shaper	94	106
Metal-cutting bandsaw	123	111
Stroud, Arva, 233 Broadway, New York, N. Y. "Index O" screw machine	72	102
Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill. Angle-compound air compressor	207	123
Terminal Engineering Co., 17 W. 44th St., New York, N. Y. "TEC" long wheelbase truck	167	118
Thomas Elevator Co., Hoyne Ave. and Monroe St., Chicago, Ill. Wrenchless quick-acting chuck	83	104
Thompson Grinder Co., Springfield, Ohio. Milling cutter grinding attachment	58	100
Tolhurst Machine Works, Troy, N. Y. Friction clutch pulleys	130	112
Union Twist Drill Co., Athol, Mass. Slab milling cutter	187	121
United Engine & Machine Co., Fresno, Calif. Sulprizio's aligning jig	163	117
United States Electrical Tool Co., Cincinnati, Ohio. Wheel and disk grinder	29	95
Universal Sales Corp., 12141 Cardoni Ave., Detroit, Mich. "Universal" standard jig bushings	232	127
Universal Self Lubricating Bearing Corp., Lincoln, N. J. U. S. L. self-lubricating bearings	230	127
Wallace Supplies Manufacturing Co., 1312 Diversey Parkway, Chicago, Ill. Ring bending machine	126	112
Walls Sales Corp., 96 Warren St., New York, N. Y. Abrasive band grinder	35	96
Warner & Swasey Co., Cleveland, Ohio. Improved staybolt machine	78	103
Watson-Stillman Co., 50 Church St., New York, N. Y. Hydraulic flanging press	98	107
Whiting Corp., Harvey, Ill. Portable car hoist	172	119
Whitney Metal Tool Corp., Rockford, Ill. Angle iron notcher and bender	128	112
Wikander, Oscar R., 8 W. 40th St., New York, N. Y. Jaeger roller bearings	225	126
Williams Tool Corp., 12th and Liberty Sts., Erie, Pa. Portable pipe machine	112	109
Wilmarth & Morman Co., Grand Rapids, Mich. No. 78 motor-driven surface grinder	38	97
No. 1 motor-driven universal tool and cutter grinder	44	98
Wroe, C. I., Co., Room 1514 Pershing Square Bldg., New York, N. Y. "Trump" belt lacing machine	210	124
Zeh & Hahnemann Co., Newark, N. J. No. 2—8½ percussion power press	102	107
Zoerman-Clark Manufacturing Co., 7146 Carpenter St., Chicago, Ill. Adjustable screw plate	191	121

Ideas from Practical Men

Devoted to the exchange of information on useful methods. Its scope includes all divisions of the machine building industry, from drafting room to shipping platform. The articles are made up from letters submitted from all over the world. Descriptions of methods or devices that have proved their value are carefully considered, and those published are paid for

Scaffold Bracket for Locomotive Repairs

BY FRANK MCGOUGH

In these days of large locomotives it is not always easy to erect scaffolds that rest on the floor and for that reason the bracket illustrated herewith was designed and is being successfully used in the Santa Fé shops at Albuquerque, N. M. The general appearance of this device and its application is shown in Fig. 1, while Fig. 2 shows the design and also all necessary details for building the bracket.

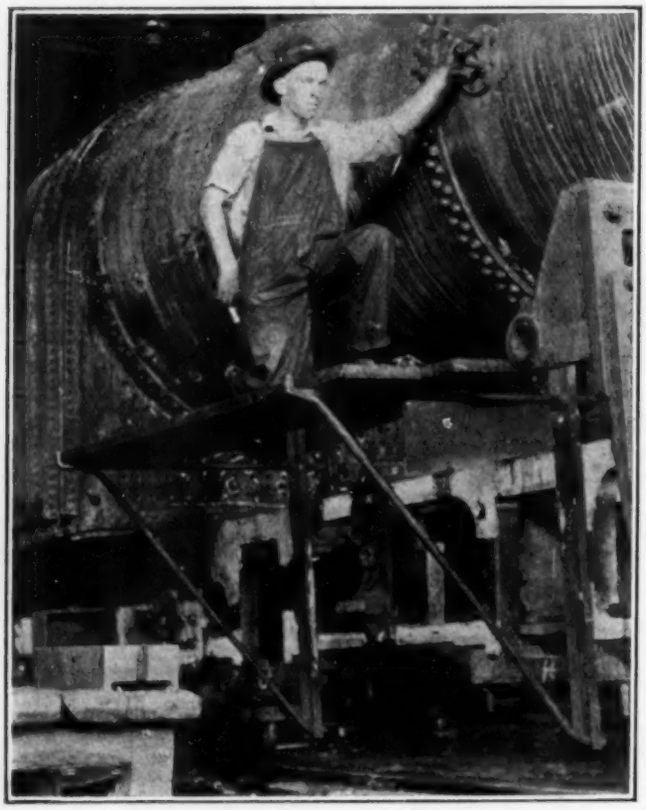


Fig. 1—Bracket platform for locomotive work

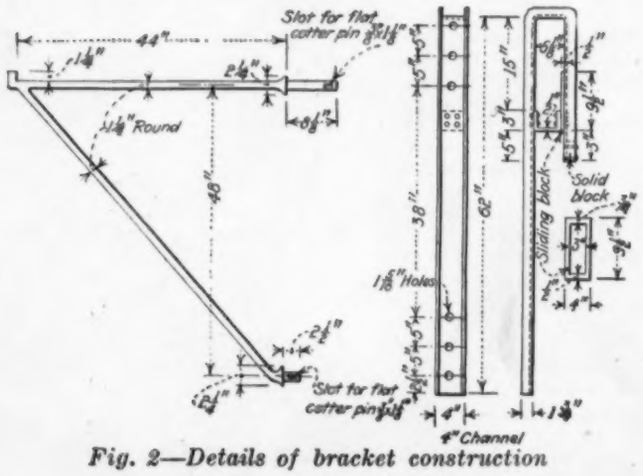


Fig. 2—Details of bracket construction

The upright or back of the bracket is made of 4-in. channel steel, bent, drilled and riveted as shown in Fig. 2. The bracket is made of 1¼-in. round steel and is held in position in the channel by means of flat keys or cotters as shown. The upright is slipped over the upper member of the locomotive frame, and the bracket is put in position and keyed in place, after which it is only necessary to lay on the desired planking and get to work.

Tools for Making Sewing Machine Crankshafts

BY F. O. HICKLING
Newark-on-Trent, England

As a component of a sewing machine, the crankshaft is not one upon which a great deal of money can be expended, either initially or in production. No great degree of accuracy is called for, and the design as shown in Fig. 1 was evolved in order to eliminate as much machining as possible.

The material used is cold-rolled steel, ½ in., plus or minus 0.001 in. in diameter.

The first operation is sawing to length, precautions being taken to keep the ends square and the over-all length within a limit of 0.005 in. plus or minus.

Bending is performed in a small power press with the tools shown in Fig. 2. The tools consist of a punch and die, with a bracket attached to the latter to accommodate a stop screw. Because of the ductile nature of the material an angle of only 2 deg. is required to take care of the spring-back of the piece after bending.

Both ends are centered at one handling in a horizontal duplex drill of the Garvin type, with the work held in the simple fixture shown in Fig. 3. The part is located by the conical cups, which also constitute the drill bushings. One of the bushings is pressed into the body of the tool while the other is threaded to fit a liner bushing pressed into the opposite end of the yoke and held against end movement by the two cross pins *A*.

While the thread supplies the movement necessary to clamp the part, the plain portion of the bushing *B* is depended upon for alignment by being a close fit in the corresponding plain portion of the liner bushing. The plain bearing portions of the bushings are behind the thread instead of before it, and the depth of the conical cup is such that the work bears upon it at a point opposite the plain bearing surfaces and thus tends to hold the bushing in line.

Turning the crank is performed on a small facing

lathe equipped with the special carrying fixtures shown in Fig. 4, one of which is threaded to the spindle nose while the other runs on a ball bearing on a shank fitted to the tailspindle.

Each part of the carrying fixture has a radial slot

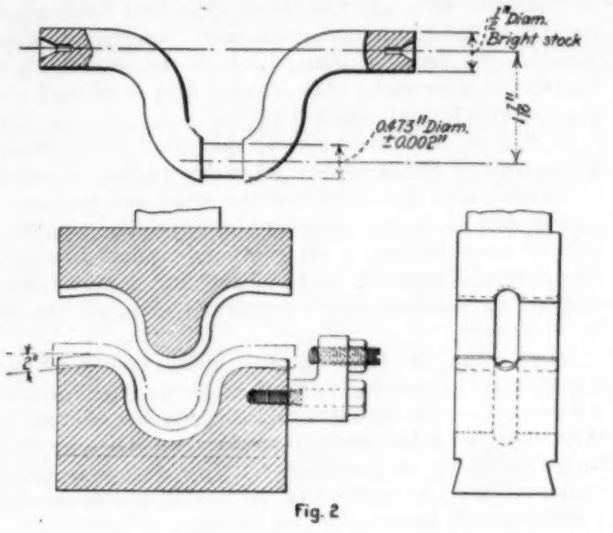


Fig. 2

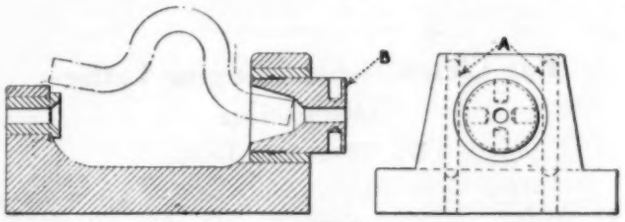


Fig. 3

Fig. 1—Crankshaft for a sewing machine. Fig. 2—Jig in which the centers are drilled. Fig. 3—Tools for bending the crank

0.502 in. wide cut halfway across the face, into which the work piece fits very closely. A bushing *A* in the driver and a corresponding bushing *B* in the opposite part, occupy positions coincident to the centerline of the work and at a distance from the center of rotation

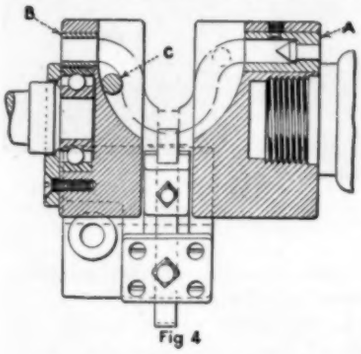


Fig 4

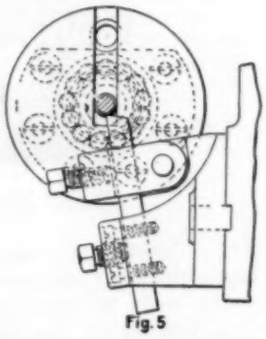


Fig. 5

Fig. 4—Fixtures that drive the work for turning. Fig. 5—The turning tool and holder

equal to the radius of the crank. Both bushings are 0.502 in. internal diameter, so that the component fits them quite closely and thus prevents undue eccentricity. In the bushing *A* is a center point over which the center in the work fits and which thus acts as an end stop.

The carrier on the tailspindle has a ⅜-in. rod *C* placed crosswise of the slot, and this rod bears against one side of the bend which forms the crank and thus forces the work against the center-point in bushing *A* in the driving member. A setscrew in bushing *A* binds the work against the side of the bushing, but the slot in the face of the member is relied upon to drive the work.

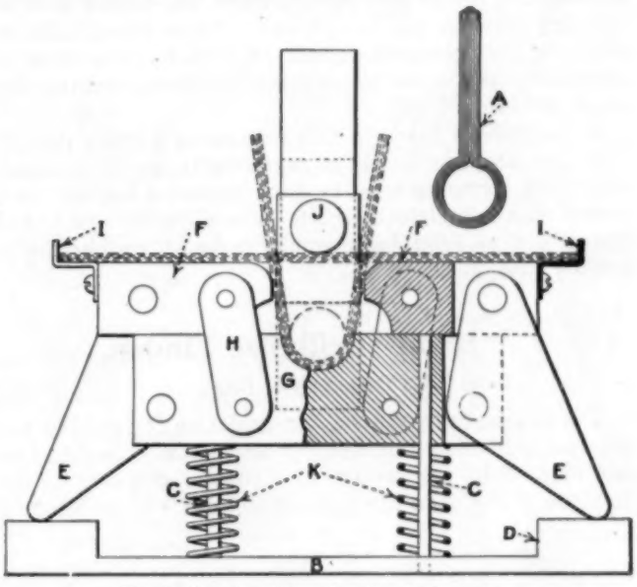
The turning tool, shown in Fig. 5, is of a width equal to the length of the bearing to be turned. It is held in a special holder bolted to the tool block and is fed straight in to the cut until the cross-slide reaches an adjustable stop-screw which determines the finished diameter of the bearing. The salient feature of the holder is that the tool is solidly supported at a point close to the work.

Press Tools for Bending Strip Aluminum

BY WALKER S. QUIMBY

The following is a description of a set of tools used in a foot press for bending aluminum strips into the shape shown at *A* in the illustration. The finished piece is composed of four strips of soft aluminum ¾-in. wide and of 20 B. & S. gage, bent around a ¾-in. mandrel, the outside corners being left sharp, as shown.

The tools were made of machine steel, with the exception of the springs and guide pins. The base *B*



Tools for bending laminated strips

serves as a holder for the guide pins *C* and has raised portions, as at *D*, upon which the levers *E* both rest and slide. The side rams *F* are attached to the body *G* through the levers *E* and the links *H*.

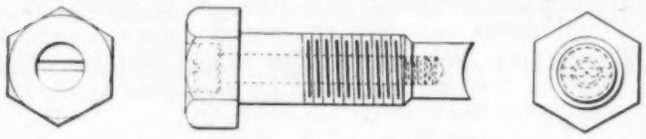
The action is as follows: The four strips to be bent are laid upon the tops of the rams *F*, being located by the stops *I*. When the ram of the press carrying the mandrel *J* descends, the strips are forced down between the rams *F* and into the groove on top of the body *G*. As the motion of the ram continues, the body *G* is forced downward, compressing the springs *K* and causing the levers *E* to move outwardly, thereby moving the rams *F* inwardly and pressing the work so that it envelops the arbor *J*.

The sectional view shows the work in dotted lines as it has progressed to the point where the rams *F* begin to move inwardly.

A Clampscrew With Pin Attached

By Joseph Walker

A great improvement over the ordinary clampscrew-and-pin arrangement, in which a loose pin is used ahead of the screw to prevent scoring and marring of the piece to be clamped, is one in which the screw carries the pin with it. This avoids the troubles usual with the loose type—sticking of the pin in the hole, loss of the pin



Clampscrew with attached shoe

when the screw is removed, and failure of the pin to drop back and clear the piece when the screw is released.

As will be seen from the sketch, the construction is quite simple, and there is nothing to get out of order. A small hole is drilled through the axis of the screw, and the head end is counterbored to take the head of a small, standard fillister-head screw which passes through the clampscrew and is tapped into the pin. The small screw should at first be left a little longer than required and then shortened as necessary, so that when in place and forced into the pin there will be just a little end-play between the two screws. There should also be plenty of leeway for the small screw in its hole, so as to allow the clampscrew to be rotated without turning the small screw and pin.

A clampscrew made in this way saves a great deal of time and annoyance. It is particularly useful in cases where the clamping must be done against a flat spot or a recess on a cylindrical surface, where the failure of the clamp pin to drop back would make it impossible to remove the piece.

A Handy Drill-Size Finder

By Charles R. Beal

The illustrations show a handy device for finding the decimal equivalents of number and letter size drills on one side, while the reverse side enables the user to determine at a glance the sizes of tap drills to leave stock

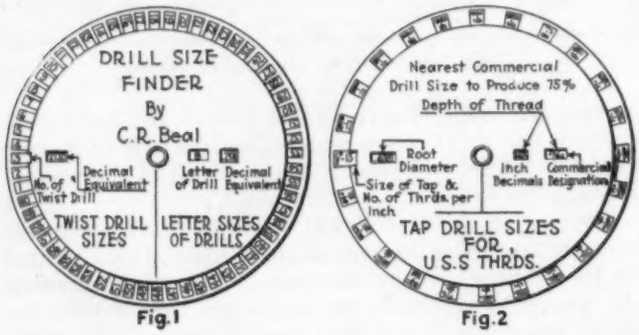


Fig. 1—The obverse. Fig. 2—The reverse.

for a 75 per cent thread. The three disks are cut from calendered cardboard stock about 0.016 in. thick. The center disk is about 3¾ in. in diameter and the outer disks just sufficiently smaller to expose the outer row of figures on the center disk.

In Fig. 1, which we will call the obverse, the periphery of the center disk is marked off in rectangular spaces 6 deg. apart, and the numbers from 1 to 60 are inscribed in these spaces. Nearer the center and on the same radial lines are placed the decimal equivalents of the sizes. Still nearer to the center of the disk, but on the opposite side, are the letter sizes and their equivalents, laid out in the same manner. Rectangular openings in the smaller disk disclose the corresponding figures for each size as the smaller disk is rotated about the center after assembly.

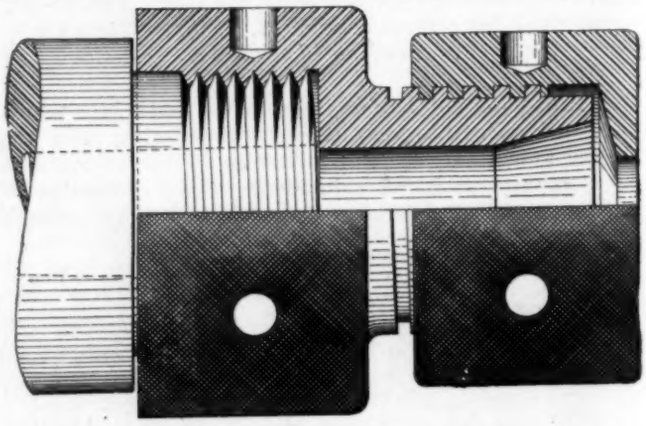
In Fig. 2, the reverse side, the same center disk is divided along its periphery in spaces 15 deg. apart and in these spaces are inscribed the sizes and corresponding pitches of commonly used threads. The root diameter of each thread is on the same radial line, while diametrically opposite on the same line appear the corresponding decimal and commercial sizes of the drill to be used.

When completed the disks should be given a couple of coats of white shellac to protect them from dirt, and fastened together by means of a common eyelet so that they will be held closely together yet be free to be turned relative to each other. The device is of convenient size to be carried in the pocket and saves many a reference to handbooks and tables.

Bar Chuck for the Engine Lathe—Discussion

By William E. Lang

Referring to an article under the title given above, by Arthur Silvester, on page 519, Vol. 60, of the *American Machinist*, I venture to describe a similar tool



Collet chuck for round stock

that I designed some years ago for a like purpose. The sketch herewith shows its construction.

The body of the chuck was first rough bored and threaded to fit the nose of the lathe spindle, after which it was screwed to place and finished in position. For the compression nut I chased a square thread, as I believe that such a thread is better able to withstand the wear and strain of constant usage than the ordinary form of V-thread.

My chuck was made of tool steel and left soft, but for the best results in long, continuous service it should be hardened and ground. If the hole for the collet is to be lapped, a key should be fitted to the body to insure that the collet will always occupy one position when in the chuck.

News of the Week

Secretary Work Would Have Committee Simplify Patent Regulations

Asks associations to aid office in expediting procedure

Secretary of the Interior Work has taken steps to formulate a committee composed of representatives of the American Bar Association and leading Patent Bar Associations of the country to simplify methods of procedure and expedite the business of the Patent Office.

Through the Commissioner of Patents, invitations were sent to the presidents of the American Bar Association, Americn Patent Law Association, New York Patent Law Association, Chicago Patent Law Association, Cleveland Patent Law Association, Michigan Patent Law Association, and Pittsburgh Patent Law Association asking them to nominate a member to serve on the committee.

The plan of Secretary Work is to have the committee after its organization make a thorough review of the Patent Office and to submit suggestions for changes in methods that should result in bringing the work of the bureau to a current basis in the near future. Because of a tremendous increase in the patent business during the last few years the Patent Office has been unable to keep up with the number of applications for patents that have been filed by the public. A copy of the letter addressed to the various associations follows:

"Recognizing the great value of the Patent Office in the development of the industrial life of the United States, I am especially desirous of doing anything possible to simplify methods of procedure and to expedite the business of that office.

REMOVE COMPLICATIONS

"In all institutions where methods of procedure have gradually developed, the general tendency is that such procedure becomes more complicated, especially where both technical and legal questions are involved as time passes in the same cases. Therefore, in my judgment, it would serve a very useful purpose, not only for your profession but for the public as well, to have a thorough review of the Patent Office. This is particularly true at the present time on account of the tremendous increase of patent business and the difficulty the Commissioner is experiencing in bringing the work to a current basis promptly.

"Under the circumstances, I am asking the presidents of the Patent Law Associations and the president of the American Bar Association to nominate members of such a committee to review the operations of the Patent Office and to submit suggestions to simplify methods of procedure and to expedite business. This committee should be composed of about seven members, possibly one from New York, one from Chicago ,one from Cleveland, one from Pittsburgh, one from Detroit, and two from the city of Washington, one representing the National Association of Patent Lawyers, and the other representing the American Bar Association. I have selected the cities named because each has a well organized patent law association.

FUNDS ARE SCARCE

"Unfortunately, the Department has no funds available for the purpose of paying any expenses of the committee, and services will have to be voluntary. Office quarters and stenographic or clerical assistance will be supplied.

"The Commissioner of Patents cordially approves this suggestion and joins with me in inviting you to nominate a member of this committee from Washington."

Excellent Auto Export Business this Year

Increases in the number of passenger cars and motor trucks exported and in the number of American cars assembled abroad were the salient features of the automotive export situation during May, although the total value of automotive products exported was almost $2,000,000 below the figure for April, says the Automotive Division of the Department of Commerce. May values amounted to $20,966,227, as compared with $22,829,150 in April $21,226,273 in March, $19,566,226 in February, and $18,465,202 in January.

The phenomenal extent of automotive shipments from the United States so far this year is measured by the fact that during the first five months their aggregate value has reached $103,053,078, or about 57.7 per cent of the total value for the entire year 1923.

STEADY GAINS

Passenger cars were exported from the United States and Canada during May to the number of 18,665, compared with 18,123 in April; and trucks to the number of 3,800, compared with 3,170 in April. In both cases the increases were the result of a sudden spurt in the exports from Canada. American-car assemblies in foreign countries also expanded materially, reaching 12,850 in May as compared with 11,307 in April.

Victor Tool Co. Merged with Landis Company

The Victor Tool Co.,Waynesboro, Pa., manufacturers of collapsible taps, automatic die heads, floating tool holders, and nut facing machines has been merged with the Landis Machine Co., Waynesboro, Pa., manufacturer of threading die heads and machines. In the future all correspondence applying to Victor products should be addressed to the Landis Machine Co., Victor Plant, Waynesboro, Pa.

The trade name "Victor" will continue to apply to all the lines formerly made by the Victor Tool Co. There will be no change in the selling arrangements of the Victor product.

This merger permits the Landis Machine Co. to handle both internal and external threading requirements.

Welding Society Issues First Directory

As a sort of celebration of its fifth anniversary, the American Welding Society, 29 W. 39th St., New York, will publish its first membership directory. The entire editorial section of the August issue of its journal will be devoted to this purpose. In connection with the collection of data for its directory, a membership drive is under way to bring the total number of members up to 1,000. The directory will be the first important compilation of welders and it is hoped by means of the membership drive to make it as complete and up to date as possible in every particular.

Asks for Proposals on Anderson Foundry

Judge Kittinger, in circuit court at Anderson, Ind., has issued an order directing the receiver of the Anderson Foundry & Machine Works of that city to receive any written proposition tendered by any person or corporation for settlement of the trust, purchase of the property or re-organization of the company. A petition of a committee of stockholders to intervene in the receivership proceedings was denied by the court. It is expected that some action will result from Judge Kittinger's proposal.

A.S.M.E. Will Meet in December

The forty-fifth annual meeting of the American Society of Mechanical Engineers will be held in New York the first week of December. The dates will be Dec. 1 through 4. During the same week the National Exposition of Power and Mechanical Engineering will be held in the Grand Central Palace.

The technical program is well under way and the various Professional Divisions have submitted their tentative programs. The authors are at work on their papers which must be in the hands of the publication department during September.

A joint session of the Safety Codes Committee with the American Society of Safety Engineers is under consideration. The topic for this will be Mechanical Design for Safety. Two papers are to be presented.

The mechanical-design phase of the meeting will be especially strong as the Machine Shop Practice Division is sponsoring programs for three sessions, one of which will be in co-operation with the Special Research Committee on Lubrication, and the second in co-operation with the Special Research Committee on Cutting and Forming of Metals. The third will have general papers. The session with the Committee on Cutting and Forming of Metals will deal with the measurement of hardness and the papers will be the result of research completed during the summer.

British Machine Tool Council Personnel

The new members of the council of the British Machine Tool Trades Association include G. S. Maginness, of the Churchill Machine Tool Co., Ltd.; Arthur Smith, of Dean, Smith & Grace, Ltd.; and L. G. Taylor, of Charles Taylor (Birmingham), Ltd., who takes the place of W. L. Taylor. The other members of the council were re-elected, C. J. Robinson now representing the wood-working machinery section of the association, instead of the firm of T. Robinson & Son, Ltd.

Preparing Plans for Management Week

Five national societies will participate in Management Week, Oct. 20-25, 1924, in seventy-five states and cities throughout the United States and Canada. An official representative of each Society has been appointed to serve on a national committee on arrangements. The personnel of this committee is as follows:

Henry Bruere, the representative of the American Management Association; Sterling H. Bunnell, representing the American Society of Mechanical Engineers; W. H. Leffingwell, representing the Taylor Society; E. M. Robinson, representing the Society of Industrial Engineers, and C. R. Stevenson, representing the National Association of Cost Accountants. At the organization meeting C. R. Stevenson was elected permanent chairman of the committee and Ernest Hartford secretary. It is the wish of the committee that all correspondence be directed to its secretary at the Engineering Societies' Building, 25-33 West 39th Street, New York.

Want Tool Post and Tool Holder Data

The importance of the standardization of tool holders and the opening of the post which fastens them to the lathe, the planer, or the shaper will be appreciated by all manufacturers and users of machine tools. This is one of the four sub-projects now under way as part of the joint sponsorship for small tools and machine tool elements which was accepted by the American Society of Mechanical Engineers and the National Machine Tool Builders Association some time ago at the request of the American Engineering Standards Committee.

The Sub-Committee's Work

The sub-committee on the standardization of tee slots having been organized in April of this year, the central committee is now organizing a sub-committee to undertake the standardization of tool posts and tool holders. This sub-committee will function independently under the general guidance of the central committee which is headed by Harry E. Harris as chairman. It will include official representatives of the producer, consumer and general-interest groups and, like the sub-committee on the standardization of tee slots, will have its own chairman and secretary.

This last named sub-committee now consists of fourteen members representing four different organizations. S. J. Teller is its temporary chairman, and Herman Casler its secretary. At the organization meeting a working committee of seven headed by Erik Oberg as chairman was appointed. The other members of this committee are J. B. Armitage, L. D. Burlingame, K. L. Herrmann, E. R. Norris and S. J. Teller, ex-officio.

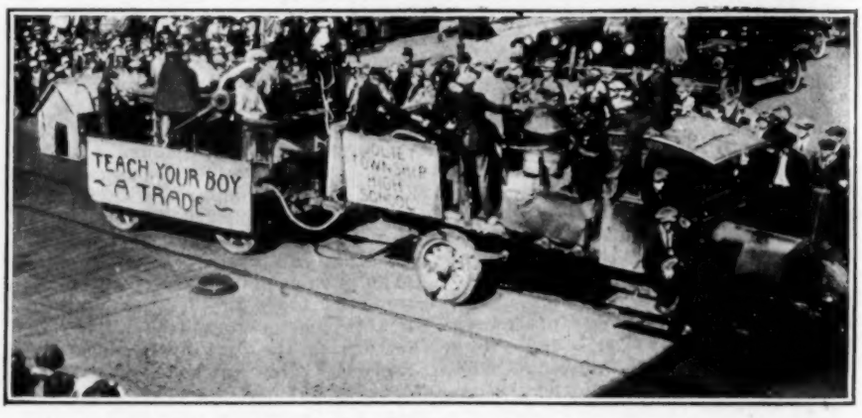
The central committee on the standardization of small tools and machine tool elements will welcome suggestions for the personnel of the new sub-committee on tool posts and tool holders as well as all available data on this project.

The sub-committee on the standardization of tee slots also desires to have before it full information and the opinions of the Society's members concerning the various phases of its task. When writing, address your reply to C. B. LePage, Assistant Secretary, A.S.M.E., 29 West 39th Street, New York.

General Motors Takes Over Klaxon

The General Motors Corp. has taken over the Klaxon Co. and has transferred the manufacture of the Klaxon products to the Remy Electric Division at Anderson, Ind., it was announced recently by Alfred P. Sloan, Jr., president. The Klaxon Co. is to be continued for the purpose of merchandising Klaxon horns through distributors, service stations and dealers, along the same policies as pursued in the past. No changes in personnel are contemplated. Offices of the Klaxon Co. will eventually be located in the General Motors Building at Detroit, Mich. The sale of Klaxon horns to car manufacturers will be handled by the Remy Electric Co.

Vocational Training in Joliet High School



The float in the May Day Parade in Joliet, Ill., as shown above was entered by the High School of that city. It is interesting to note that the vocational training department is an exceptional one in this school and contains equipment valued at $125,000. *There are lathes, shapers, surface grinders, planers, drills, milling machines, boring mills and other tools used by the students. This picture is published through the courtesy of Ross L. Marshall of Joliet.*

France Working Hard to Reorganize

Business steady and new government working smoothly—Export and import trade—Better feeling among manufacturers—What is an artisan?

By Our Paris Correspondent

STAGNATION still reigns. General trade is not appreciably more than from hand to mouth.

The business administration which has recently come into political power is expected to improve both interior and foreign relations and the commercial traffic which will follow in its wake. Sympathetically or otherwise sterling and dollar exchange fell off to the bettering of the franc a matter of 20 per cent in ten days, which is by no means suggesting that a new president and a new cabinet of socialists and radicals will assure the immediate stabilization of the franc.

Employment statistics show few idlers in any line. The metallurgical industry boomed again for a fortnight on the falling of the franc, but fell off again upon its appreciation after the installing of the new cabinet.

The railways are improving their rolling stock equipment and the automobile plants are also replacing and re-equipping which has brought in some demand for machinery and tools. The second-hand tool market is affecting French production and distribution of new machinery to a greater extent than was thought possible. Probably the price factor has something to do with this.

Exports of automobiles in May were to the number of more than four thousand, of which but ten went to the United States, Germany taking the largest number.

French Exports

French foreign trade exports for the first three months of 1924 showed increases over 1923 for Great Britain, the United States, Germany and Belgium. Imports increased also from Great Britain, the United States, Germany and Belgium.

The May price index was 459 as compared with the Fisher price index for the United States of 145. This of itself should show plainly that most estimates of French prosperity as indicated by trade figures are more or less fictitious.

An effort is being made in the French machinery and metal fabricating trades towards an exchange of experiences with respect to raw and semi-raw materials employed. The chief headings of the program, on which records are to be kept available to all members of the association, are: "Nature and origin of raw materials. For what reason is any particular specification preferred? Do you yourselves make a laboratory analysis of materials employed? Do you habitually make comparative experiments by substitution? Are you disposed to furnish colleagues specimens of your castings or pressings or stampings with a view to the amelioration of the use of materials employed generally in the fabricating metal trades?" The idea is probably not new but it is a comparatively recent manifestation in French industrial circles. The replies will be centralized by the French Association of Mechanics and Founders and available to associates.

The *Journal Officiel* has just published a government decree admitting foreign students to the Ecole des Arts et Metiers on the same footing as those of France. This important engineering school of technology is daily increasing the number of students, and the Minister of Instruction Publique has decreed that henceforth students who may have completed one or another of the engineering courses may bear the title of engineer, and during the period of their matriculation that of student-engineer. Foreign students are admitted without examination on presentation by their embassies or legations.

Interchangeable Gears

The Permanent Standardization Committee is at the moment discussing the methods for the unification of interchangeable gears for use or application in general machinery. In connection therewith is being discussed the nomenclature appertaining to machinery components in general.

There has recently come to the surface in France the question of the inviolability of the French patent. It is considered that the text of the patent, or brevet, is not of itself a protection as is commonly supposed. The text serves only for an appreciation of the motive of the presentation of the article or the process for which it stands sponsor, but that it is absolutely necessary that this text should be accompanied by annexed designs to secure full protection for the inventor under the existing French patent law.

Big business has made its entry into all things metallurgic in France. At the same time there are many small manufacturers that are scarcely out of the artisan class. The artisan seeks protection and freedom from certain taxes which are imposed on industries organized on more ambitious lines and has forced the issue before the government as to the definition of what an artisan really is and what a manufacturer really is. The distinction is a delicate one. The whole issue is based on whether an artisan using in his workshop motive power drawn from an outside source is really an artisan or is he an industrial enterprise. It was decided that the mere fact of his using outside power in his little industry by no means should be considered as putting him into a class which is taxed more highly than another who works solely by his own manual labor in producing his output. On the other hand it was decided that a mechanical saw mill operator was not in the artisan class. These fine distinctions are what make trade and industry so complicated in France and have been the bane of many American and English operators in France.

A final summing up of the industrial and commercial situation in France at the moment may be put down to the effects of the aftermath of the political uproar of the last few weeks, the uncertainty of the reparations question, the final acceptance of the Dawes plan and the attendant wild fluctuations of the franc. Industrial France since the war has reorganized itself with a thoroughness unexampled in its history, especially its metallurgical and attendant accessory industries. From being self-sufficient and self-supporting in so great a bulk of articles of consumption, and an importer of certain other lines, France has become an exporter in almost all lines save those of cereals and exotic food stuffs not grown within her borders.

When business, and politics and the franc get stabilized, the hey day of French prosperity will be born. Until then all prognostication as to trade possibilities and conditions which may make or break them are purely speculative, based on the wish rather than on material signs.

The Bowser Company Is Re-Organized

Complete re-organization of the S. F. Bowser Co., manufacturers of clarifying systems, oil and gasoline tanks and pumps and water softeners, of Ft. Wayne, Ind., which recently came under the direction of a creditors committee, was effected July 7 when practically a new board of directors was named. The new board is composed of S. F. Bowser, S. B. Bechtel, Henry C. Paul, William J. Vesey, Robert M. Fuestel, Dr. G. M. Leslie, B. Paul Mossman, all of Ft. Wayne, and Charles N. Gillette of the First National Bank of Chicago. The board elected the following officers: S. F. Bowser, chairman of the board of directors; S. B. Bechtel, president; D. A. Corey, vice-president; H. J. Grosvenor, secretary-treasurer; W. A. Bersch, controller and William J. Vesey, general counsel. The creditors' committee consisting of Chicago and New York bankers took over the affairs of the company, which is regarded as one of the largest of its kind in the country, in May of this year. Since then the office and plant management have been re-organized and the shift in directors is said to complete the reorganization planned by the new financial advisers.

The Business Barometer

This week's outlook in Commerce, Finance, Agriculture and Industry based on current developments

By Theodore H. Price
Editor, *Commerce and Finance*, New York

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THE PREVAILING opinion in New York is that the conservatives have triumphed in the nomination of John W. Davis as the Democratic candidate for the Presidency. Therefore the fear of radicalism has vanished and with abundant credit the way is opened for a revival of enterprise and its concomitant of speculation.

The stock market reflects this view and as the week closes most of the active securities are higher. As this article is not political no opinion is expressed as to whether Mr. Davis or Mr. Coolidge will be elected. The feeling is that business will be safe in the hands of either and the possibility that La Follette's candidacy may throw the choice of a President into the House of Representatives is for the time forgotten or ignored.

Later on the fear of such a *contretemps* may return to plague the over-confident, but for the present it will be difficult to repress the elation that is generally felt in financial circles. Whether it will spread to the commodity markets and what is called general business remains to be seen, but there is some indication that the former are infected and with rising prices for the great staples it is unlikely that distributive trade will remain dull.

July corn advanced to over $1.00 a bushel on Wednesday and the new crop could then have been sold for December delivery at 86 cents or higher. The advance was attributed to a Government report indicating a crop of only 2,515,000,000 bu., which compares with a yield of 3,046,000,000 bu. last year. The optimists figure that 2,500,000,000 bu. at 90 cents will net more money to the farmer than 3,000,000,000 bu. at 60 cents, and they are right, though they ignore the increased cost of living that those who are not farmers will have to face.

Wheat and the other cereal crops advanced with corn, and cotton has also recovered most of the decline caused by the Government report of July 2. Among the foreign grown staples silk and rubber are slightly higher. Coffee has been erratic and has lost most of the advance recorded before the public knew of the revolution in the state of Sao Paulo, where two thirds of the Brazilian coffee crop is grown. As Sao Paulo is the richest of all the states in the Brazilian Republic it is quite possible that with competent leadership it may be able to assert its independence and secede. In that case a resumption of coffee valorization and higher prices would be probable.

Sugar is about the only commodity that failed to share in the upward movement, but it is not appreciably lower and the large supply is being so rapidly distributed that those who had predicted the accumulation of burdensome stocks seem likely to be disappointed.

But when we get away from the exchanges where prices are almost instantly responsive to good or bad news the story of the week's business still leaves something to be desired. The steel industry is only about half employed and the other half continues to subsist on the hope of greater activity, which is, however, alleged to be a little nearer realization because the railroads have commenced buying again.

Copper is about steady at the same old price of 12⅛ to 12⅜ cents. The stolid stability of copper suggests that some of the nations who lack gold might adopt it as a standard of value. The automobile business is looking up and those who make "motor buses" are said to have all they can do as motor bus lines are being established in every direction.

The consumption of gasoline is believed to be the largest on record, but the production of petroleum is also at or near the peak and the market for crude oil and its derivatives is rather easier.

The wool market is hard to gage because there are so many different grades, but it seems to be slightly lower on the average and the demand for both cotton and woolen textiles is still slack although there are many who feel that jobbers and retailers must soon replenish stocks that are generally believed to be very small.

The weekly statement of the Federal Reserve Banks shows a rise of 1 per cent in the reserve ratio, a gain of $23,000,000 in the gold held and a decline of $38,000,000 in earning assets, which now total only $820,000,000. Of this sum commercial rediscounts represent but little more than one third.

In Europe the conditions are also growing more auspicious. Premiers MacDonald and Herriot have again been conferring in Paris and the latter is quoted as saying that "it is the brighest day for the Allies since the war." The truth is that it is nearly six years since the war ended and that the enmities that it engendered are gradually becoming less bitter as the struggle for existence forces men to find a *modus vivendi*.

Our large exports of silver to India and the Far East are also encouraging. Shipments for the last six months have been very nearly if not quite the largest on record and an Oriental demand for silver is always understood to connote prosperity in that part of the world.

It is believed that in the penetralia of high finance the stage is being set and the parts are being assigned for the issuance of a huge German loan that will be offered on both sides the Atlantic.

What's Doing in Industry

While the improvement in business was slight during the past week, the optimism was more pronounced and machinery and machine tool dealers in all parts of the country expressed belief in "better times ahead." Railroad buying is not up to normal, but there has been a slight improvement in general industrials and there is an anticipated improvement due in the automobile field.

The reports of the steel companies are not as good as they were expected to be but it is rumored that the railroads will be buying steel within the next sixty days.

Post-convention days did not change business much, although there has been a strengthening of the stock market during the past two weeks.

Reports from Detroit are of a very conflicting nature. Many people see an improvement in automotive production while others are inclined to be pessimistic. Only a few facts are sure. Production for the first six months was about equal to that of the first six months of 1923; automotive exports are much larger than last year and will probably increase further during the last half; production during the summer months will not be as great as that of last summer; the totals for the year, according to the best prognosticators, should be very close to those of last year.

The Industrial Review

Progress of the machinery and machine-tool business in various parts of the country

THE following reports, gathered from the various machinery and machine tool centers of the country, indicate the trend of business in these industries and what may be expected from the future:

New York

A much more hopeful tone obtains in the New York machinery and machine tool market this week, and dealers generally predict an improvement during the next two months. Business during the week did not show any signs of betterment and merchants reported that necessities have been purchased only. The Southern Railway and some of the locomotive and freight car makers were in the market and purchased some small lists. Automobile accessory makers have bought sparingly during the past two weeks, but the aggregate has been gratifying.

While dealers feel that the railroads will not be buying much during July and August, hope is held out that the automobile makers will buy more than they have during the past two months and that general industrials will also come into the markets.

Dealers in used machine tools have very little complaint to make about business. It has been better at times in the past, but the totals for the first six months of the year have been fairly large.

Exporting has remained good during the past week and exporters state that this year will be the best in their respective careers. Mexico, Canada, South America, Japan, China and the European countries are all buying more than heretofore and the prospects are bright for the remaining months of the year.

Milwaukee

It cannot be said that business in metalworking equipment is actually any better than the average in June, but the outlook is more hopeful and the situation is now believed to be in the clarification period. A check has been placed on the declining movement of production schedules by the fact that the falling off in new orders seems to have stopped. In this respect the machine tool manufacturing industry is comparable to the users of tools, the foundries and machine shops, which have to report that new business again is developing in a way that keeps orders at least on a level with deliveries.

A probable exception is the woodworking machinery trade, which has slowed down by reason of what seems to be a general policy of curtailment among manufacturers of lumber. Probably the main reason for this is the slackening of the demand for common lumber for dwelling house construction. Automobile body works, furniture and cabinet factories, and others utilizing the more select and better grades of wood, notably hardwoods, have been better buyers of stock in the first half of July than in April, May or June.

While it is not likely that definite action will be taken for at least two or three months by the Nash motor interests in actually utilizing the former Mitchell works at Racine, Wis., for production purposes, the purchase of the full complement of equipment appears to be advanced. The Nash interests have organized the Ajax Motors Co. of Racine, as the first step in organizing for ownership, management and operation of the former Mitchell plant. It is expected that a small part of the equipment will be derived from the Nash Works at Kenosha, and the Nash and LaFayette works in Milwaukee, but in the main, to place the Mitchell works in shape for manufacturing, a very heavy purchase will have to be made in the open market.

Indianapolis

Improvement is seen both in demand for metal working machinery and tools in Indiana. The improvement is slight, to be true, but it has done much to increase the optimism of the trade here. Even the automobile industry that has been dead for two or three months, is doing a little buying. There is little hope held out by automotive manufacturers that there will be any real business from this source during the summer months, but most of them believe fall will see a change for the better. They say their dealers are reporting re-sales as improving and new production, they declare, hinges much on the sale of second-hand cars. Word has been received here of the re-organization of the S. F. Bowser Co., manufacturers of oil and gasoline tanks and pumps of Ft. Wayne, Ind. The company has been in the hands of a receiver since May.

According to O. B. Iles, head of the International Machine Tool Co., here, the situation is far from alarming. The company continues to get orders for lathes from widely scattered sections of the country and business is not nearly so depressed as many would believe, he feels. In company with others, he believes the fall months—probably September—will see a revival of industrial activity.

Officials of the Vonnegut Machinery Co., say several lines of industry are making inquiries concerning specialized machinery to fit their particular needs. One of the bright spots now appears to be the furniture industry. Reports from executives attending the midsummer shows indicate a good volume of business, which will necessitate capacity production for some time and will open a field for woodworking machinery that has been closed for some weeks. The Bessire company reports a fair volume of trade in ice cream manufacturing machinery and special machines for dairy plants in Indiana. This business is expected to continue good until cold weather.

Detroit

With six months of the year behind and comparisons between 1924 and previous years possible, leaders in the machinery and machine tool field in Detroit and vicinity are confidently anticipating better times.

This year averages well with previous ones, executives assert, with June having held its own in a most encouraging degree. An upward movement in the employment situation with most of the factories which recently curtailed production taking back hundreds of men in groups has had a stabilizing influence on general business conditions in this section.

Announcement of new models by leading automobile manufacturers is the outstanding feature of the past week in the machinery and machine tool field in Detroit.

Incorporation of a number of new features and equipment of the new models with balloon tires has caught the popular fancy, while engineers and technical men find in the changes of motive plants an indication that the next few years will find a concerted move to improve automobiles from the standpoint of motor efficiency as well as looks.

Resumption of larger production schedules in most of the automotive and accessory plants has done more to improve the business morale of Detroit than any other factor.

Canada

The machine tool market in Canada appears to be improving steadily. While the demand is confined, for the most part, to small lots, the turnover is considerable. Manufacturers are now making purchases of long needed equipment, and prospects of continued activity are good. The Canadian National Railways have inquiries out for equipment for their Montreal shops, and the Canadian Pacific Railway is in the market for machinery for shop equipment and improvements in various parts of the country. Reports from Toronto are to the effect that inquiries for machine tools in that district are more numerous, and several sales of some importance have been made during the last two weeks.

Car-building plants have been running fairly actively up to date, but it is the general feeling that they are due for smaller operations within the next few weeks unless further equipment business is placed. The steel industry, as a whole, is less active than earlier in the season. The demand for

semi-finished steel products has fallen off in recent weeks.

The automobile industry is maintaining a fairly even trend. Ford of Canada has increased sales about $3,000,000 for the year to date.

The activity of the pulp and paper industry is having its effect upon the machinery manufacturing companies. One well known concern reports inquiries before them covering a number of big pulp and paper propositions involving anywhere from three to five million dollars in each case. The employment situation throughout the country has improved very materially of late. The largest increase took place in the province of Quebec and the prairie provinces, while construction and transportation requirements in Ontario brought the percentage up materially.

Business in scrap metals is without trend, as there is sufficient material moving to definitely show where prices are. Steel mills are not interested and railroads are placing little on the market.

Southern District

Machine tool and equipment sales in the South have not been as satisfactory since July 1 as the trade had expected, also falling a little below expectations the latter part of June. June sales, however, were a little better than the same month last year, and indications promise they may be a little better in July also than the corresponding month in 1923.

It seems that principal business at this time is in second-hand and rebuilt equipment, due to the tendency of buyers not to spend any more than necessary.

Activities in smaller shops the last two weeks, the Southern Metal Trades Association reports, have been only fair, though the summer outlook gives promise of better business and improving tool demand from this source. This is further evidenced by the fact that Southern furnace operators are curtailing production, though still doing fair business for last quarter delivery.

Heavy Machinery in Demand

Road builders continue to prove fairly good buyers of machinery in this district, the volume of this business so far not only is in excess of either 1922 or 1923, but the largest in some years.

Slowing up of sales to service stations in the South also is reported by distributors of both new and used tools, the industry showing little tendency to do much new construction until sales conditions improve.

Railroads still are sending in fairly good inquiries for heavier equipment, though little improvement in sales is reported. The Southern has a $3,000,000 shop construction program for Hayne, S. C., having already awarded contracts, and other roads are continuing to do a fair amount of building, so the outlook for sales in this field continue to be quite satisfactory.

Textile plants continue as inactive as ever, with few sales to this source reported, and the outlook still an uncertain quantity.

Business Items

The Cadillac Machinery Co., Detroit, Mich., has been appointed sales agent for the Dynamic Gear-Burring Machine Co.

The interests of the Geneva Tool & Machine Co., Geneva, Ohio, which was formerly operated by R. F. Birch, J. H. Birch, Jr., and B. W. Lance, have been taken over by Mr. Lance.

A new automobile body manufacturing concern known as the Associated Bodies Corp., has been organized, the general headquarters being located in Louisville, Ky. The capital stock is $10,000,000 made up of 10,000 shares of $100. R. F. Monroe, formerly president and general manager of the Monroe Body Co., of Ludington and Pontiac, Mich., and one of the promoters of the corporation, has been elected president; D. H. Harris, Louisville, is vice-president and treasurer; J. W. Silger, Louisville, vice-president and secretary. An assembly plant will be started in Louisville and it is possible that branch plants will be located in several other cities.

The Bedford Machine Tool & Stamping Co. Ltd. has been incorporated in Canada with a capital of $100,000 to carry on the business of iron foundries and manufacturers of machinery, etc., in Toronto.

The United Hammer Co., Everett, Mass., has been purchased by the Barbour, Stockwell Co., Cambridge, Mass.

Hydraulic Appliances Ltd., has been incorporated in Canada with a capital of $500,000 by D. S. L. MacDougall, A. Sinclair and others of Toronto.

Personals

RALPH E. CARPENTER, formerly assistant to the president of the Spicer Manufacturing Co., South Plainfield, N. J., has been elected vice-president of the company. Mr. Carpenter was formerly sales manager of the Taft-Peirce Co., Woonsocket, R. I.

R. M. MILLER has resigned as advertising manager for the Ternstedt Manufacturing Co., to become associated with Meinzinger Studios, Inc. He will be succeeded by F. H. JOHNSON.

C. N. LAUER, general manager of Day & Zimmerman, Inc., has been elected president of the Philadelphia Engineers' Club for the coming year.

HOWARD BIRD, general manager of the Canadian Pneumatic Tool Co., with headquarters in Montreal, is moving to London, Eng, as managing director of the Consolidated Pneumatic Tool. DONALD WESTBROOK of Winnipeg, late of Minnesota, where he was associated with the iron mining industry, will succeed Mr. Bird in Montreal.

ALBERT R. STEADFAST recently completed his fortieth year with Hill, Clarke & Co., Boston, of which he is secretary and general manager.

JOHN H. DUNLAP, secretary of the American Society of Civil Engineers, who was in a railroad accident on June 30, is much improved. He is still confined to the Presbyterian Hospital, Chicago, however.

CHARLES S. LYON has been made equipment engineer with the General Motors Corp., Detroit.

WALTER D. CRAFT, secretary and treasurer of the Vixen Tool Co., and sales manager of Heller Bros., Newark, N. J., has resigned to accept a similar position with the Glass Lined Products Co. which is in process of formation.

H. L. MODE, formerly with the Chesapeake Iron Works, has joined the sales organization of the Florandin Equipment Co., New York City.

O. L. HARRISON, who since Jan. 1 has been acting general manager, has been appointed general manager of the Dayton Engineering Laboratories Co., of Dayton, Ohio, a General Motors Corp. subsidiary.

W. A. CATHER, formerly in charge of advertising and sales promotion for the Worthington Pump & Machinery Corp., has been made sales manager of the Barrett Haentjens Co., maker of centrifugal pumps. He will be located at the company's plant in Hazleton, Pa.

LEWIS D. FREEMAN has become assistant to the chief mechanical engineer of the Chesapeake & Ohio Railroad Co. at Richmond, Va.

WESLEY F. MALLOCH has been transferred from the Milwaukee to the Philadelphia office of the Allis-Chalmers Manufacturing Co.

BRINTON WELSER, who has been assistant secretary and assistant sales manager of the Chain Belt Co., was recently elected secretary of the company. C. R. MESSINGER was re-elected president.

A. M. LINDSLEY is time-study engineer for the Stokes & Smith Co. in Philadelphia.

R. K. WHITE, formerly sales promotion manager of the Delco Light Co., has been placed in charge of sales promotion of the Chevrolet Motor Co., Detroit.

SAMUEL OWENS VAN ARSDALE has been appointed divisional comptroller of the Cadillac Motor Car Co. to fill the vacancy occasioned by the recent death of HERBERT J. LOUNT.

CHARLES B. PIERCE, for nine years secretary-treasurer and purchasing agent for the Dominion Sheet Metal Corp., Hamilton, Ontario, has resigned.

E. G. BIECHLER has been appointed general manager of Delco-Light Co., of Dayton, Ohio, a General Motors Corp. subsidiary. Mr. Biechler was sales manager and since February has been acting general manager of Delco-Light. He is succeeding R. H. GRANT, who was recently appointed vice-president and general sales manager of Chevrolet Motor Co.

C. W. MATHESON, formerly vice-president of Dodge Brothers, has joined the General Motors Corp. as assistant to ALFRED P. SLOAN, JR., president.

CHARLES GOULD, pioneer service man, has been appointed director of service of the Gray Motor Corp.

R. J. YOUNGE has been appointed general sales manager of the Canadian Car and Foundry Co. Ltd. succeeding D. R. ARNOLD, who has accepted a position with the Union Metal Products Co. of Chicago.

GEORGE M. HENDRIE, of Hamilton, Ontario, has succeeded his brother, the late COL. WILLIAM HENDRIE, as president of the Hamilton Bridge Works Co. Ltd.

J. E. GRIMM, JR., has been appointed advertising manager of the Chevrolet Motor Co. Mr. Grimm fills the place left vacant by the recent resignation of G. F. LORD.

VARLEY P. YOUNG has joined the Dayton Engineering Laboratories Co., Dayton, Ohio, as publicity director.

Obituaries

BENJAMIN G. LAMME, chief engineer of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., died recently at his home in East Liberty, Pa. Mr. Lamme was always associated with Thomas Edison and the late Charles P. Steinmetz as one of the greatest engineers and mathematicians in the world. He was born in Springfield, Ohio, and graduated from Ohio State University in 1888. Since his graduation he had been with the Westinghouse company. Mr. Lamme was sixty years old at the time of his death.

H. A. IRWIN, Far East representative of the Landis Machine Co., the Landis Tool Co., the Warner & Swasey Co., and the Kearney & Trecker Corp., died recently in Tokyo, Japan. He was formerly from McConnellsburg, Pa.

COL. J. WESLEY ALLISON died recently at his summer residence, Allison Island, near Morrisburg, Ontario. Col. Allison established the Tin Plate & Sheet Steel Co., which erected works at Morrisburg, where the first sheet tin plate ever made in Canada was manufactured. He also took a prominent part in the manufacture of shells during the war.

FRANK LOHOFF, SR., president of the Evansville Tool Works, Evansville, Ind., died recently in that city.

ALBERT SELLERS died recently in England. He was a member of the firm of Darling & Sellers, Ltd., Keighley.

FREDERICK FOSDICK, president of the Fitchburg Steam Engine Co., died recently in Fitchburg, Mass. He was a member of the Administration Council of the National Metal Trades Association.

JOSEPH O'BRIEN of the firm of Constantin and O'Brien, contracting machinists, Montreal, died recently in his 65th year.

What the Railroads Are Doing

The Western Fruit Express Co. has placed an order for 1,000 steel underframes and the Union Refrigerator Transit Co. for 500 refrigerator cars, both with the American Car & Foundry Co.

The Denver & Rio Grande has let a contract for 34 automobile cars with the Standard Tank Car Co.

The International Railways of Central America has placed an order for 90 freight cars with the Gregg Car Co.

The Wyoming & Colorado Short Line Railroad Co. has applied for authority to construct and operate a line from Casper, Wyo. to the state line of Colorado and Utah.

The Baldwin Locomotive Works has booked over $2,000,000 worth of new business so far this month. Orders are now holding around $10,000,000.

The Seaboard Air Line has ordered 30 locomotives from the Baldwin Locomotive Works.

Loadings of revenue freight during the week ending June 28 totalled 908,355 cars, an increase of 4,655 cars over the previous week, but a decrease of 113,116 cars when compared with the same week of 1923.

On June 1 there was a total of 10,875 locomotives in need of repair. This was a decrease of 991 locomotives when compared with the report of May 15.

It is expected that the New York, New Haven & Hartford R.R. will report a surplus for the first six months of the year. This has not occurred since 1917.

Preliminary reports would indicate that the Erie enjoyed a good month during June and that, while behind the business of last June, the earnings will be substantial.

Authority to issue $18,000,000 in equipment-trust certificates has been extended by the Interstate Commerce Commission to the Chesapeake & Ohio Railway Co. That amount is to be applied on the purchase of $22,598,724 worth of new equipment. The order is to be made up as follows: 50 heavy-type Mikado locomotives, $3,059,606; 50 light-type Mikado locomotives, $3,-427,337; 1,000 forty-ton automobile cars, $2,217,610; 5,500 fifty-seven and a half ton steel hopper-bottom coal cars, $11,642,745; 600 fifty-seven and one-half ton hopper-bottom ballast cars, $1,367,670; 4 all-steel dining cars, $177,578; 100 eight-wheel steel superstructure caboose cars, $263,539; 5 twenty-five ton, eight-wheel locomotive cranes, $70,000; 4 Jordan composite spreaders, $59,000.

Surplus freight cars in good repair and immediately available for service totaled 356,389 on June 30, according to reports filed by the carriers with the Car Service Division of the American Railway Association. This was a decrease of 3,255 under the number reported on June 22 at which time there were 359,644.

Surplus coal cars in good repair on June 30 totaled 162,343, a decrease of 4,972 under the number reported on June 22, while surplus box cars in good repair totaled 153,550.

Reports showed 17,912 surplus stock cars, an increase of 220 within approximately a week while there was also an increase during the same period of 831 in the number of surplus refrigerator cars, which brought the total for that class of equipment to 13,112.

Virtually no car shortage is being reported.

Exports Increased to Latin America

The trade of the United States with Latin America for the first eleven months of the recent fiscal year through May passed the billion and a half mark, and exceeded the figures for the eleven months ending May, 1923, by nearly $42,000,000, according to R. F. O'Toole, Chief, Latin American Division, Bureau of Foreign and Domestic Commerce. The value of American merchandise sold to Latin American markets jumped some $75,000,000, or from $585,000,000 to nearly $660,000,000. Our purchases of Latin American products declined in value, however, dropping from $957,-000,000 to $923,000,000. As a result of the heavier sales and the lighter buying our unfavorable trade balance with Latin America was reduced by approximately $109,000,000 to about $263,000,000 for the eleven months ending May, 1924.

Our shipments to Cuba increased in value by some $31,000,000, the largest individual gain accounting for about 41 per cent of the total augmentation in exports.

Motor and Accessory Men Will Meet in Cleveland

The Motor and Accessory Manufacturers Association will hold its 1924 fall convention during the week of Oct. 6 at Cleveland, O. The session will cover three days. Last year's fall convention, held at the Copley-Plaza Hotel in Boston, was the most successful in the history of the organization. More than 200 member concerns are expected to send large delegations.

Forthcoming Meetings

New Haven Branch of the American Society of Mechanical Engineers. Fourth annual machine tool exhibit, Sept. 15-18. Mason Laboratory, New Haven, Conn. H. R. Westcott, chairman.

American Society for Steel Treating. Sixth Convention, Boston, Mass., Sept. 22, 23, 24, 25 and 26. W. H. Eisenman, secretary, 4600 Prospect Ave., Cleveland, Ohio.

American Foundrymen's Association. Twenty-eighth annual convention. Milwaukee, Wis. Week of Oct. 13, 1924.

National Industrial Advertisers Association. Annual meeting, Edgewater Beach Hotel, Chicago, beginning October 13, 1924.

Management Week. Under the auspices of the American Society of Mechanical Engineers. Week of Oct. 20, 1924. New York City.

American Gear Manufacturers Association. Semi-annual fall meeting. Briarcliff Lodge, Briarcliff Manor, N. Y., Oct. 16, 17 and 18. T. W. Owen, secretary, 2443 Prospect Ave., Cleveland, Ohio.

Exposition of Invention. Engineering Societies Building, 29 West 39th St., New York City. December 8 to 13 inc., General offices, 47 West 34th St., New York City.

The Weekly Price Guide

Rise and Fall of the Market

Iron and Steel—Pig iron demand receding gradually with consequent curtailment of output and threatened wage reductions. Quotations, $2 per ton below a week ago on No. 2 f'dry grade. Slowness continues in the steel market. Current buying consists mostly of orders for steel bar and tin plate requirements. Car material demand is slow. Mill quotations are as follows: bars, $2.15; shapes, $1.95@$2.15; plates, $1.85@$2.15 per 100 lb., f.o.b. Pittsburgh. These prices are about 5c. per 100 lb. below July 3.

Non-Ferrous Metals—Copper inquiries better; prices unchanged. Lower tin prices in foreign markets; domestic market quiet. Lead up ¼c. per lb. in New York since July 3. Zinc market stronger; prices up ¼c. per lb.

(All prices as of July 11)

IRON AND STEEL

PIG IRON—Per gross ton—Quotations compiled by The Matthew Addy Co.:

CINCINNATI	
No. 2 Southern	$25.05
Northern Basic	24.00
Southern Ohio No. 2	24.00
NEW YORK—Tidewater Delivery	
Southern No. 2 (silicon 2.25@2.75)	28.00
BIRMINGHAM	
No. 2 Foundry	18@19
PHILADELPHIA	
Eastern Pa., No. 2x (silicon 2.25@2.75)	24.25
Virginia No. 2	28.17
Basic	24.00
Grey Forge	24.00
CHICAGO	
No. 2 Foundry local	24.50
No. 2 Foundry, Southern (silicon 2.25@2.75)	27.00
PITTSBURGH, including freight charge from Valley	
No. 2 Foundry	25.77
Basic	25.77
Bessemer	26.77

IRON MACHINERY CASTINGS—Cost in cents per lb. of 100 flywheels, 6-in. face x 24-in. dia., hub not cored, good quality gray iron, weight 275 lb.:

Detroit	4.50@4.75
Cleveland	4.75@5.00
Cincinnati	5.00@7.50
New York	5.00@5.50
Chicago	5.25@5.75

SHEETS—Quotations are in cents per pound in various cities from warehouse; also the mill base in large lots.

Blue Annealed	Pittsburgh	New York	Cleveland	Chicago
No. 10	$2.75@2.80	4.14	3.55	3.90
No. 12	2.85@2.90	4.19	3.60	3.95
No. 14	2.95@3.00	4.24	3.65	4.00
No. 16	3.15@3.20	4.34	3.75	4.10
Black				
Nos. 17 and 21	3.50	4.55	4.25	4.55
Nos. 22 and 24	3.55	4.60	4.30	4.55
Nos. 25 and 26	3.60	4.65	4.35	4.60
No. 28	3.65	4.75	4.45	4.70
Galvanized				
Nos. 10 and 11	3.60@3.80	4.80	....	4.60
Nos. 12 and 14	3.70@4.90	4.90	....	4.70
Nos. 17 and 21	4.00@4.20	5.20	....	5.00
Nos. 22 and 24	4.15@4.35	5.35	5.00	5.15
No. 26	4.30@4.50	5.45	5.25	5.30
No. 28	4.60@4.80	5.75	5.55	5.60

WROUGHT PIPE (Welded)—Warehouse discounts are as follows:

	New York Black	New York Galv.	Cleveland Black	Cleveland Galv.	Chicago Black	Chicago Galv.
1 to 3 in. steel butt welded	48%	34%	55½%	43½%	50%	37%
2½ to 6 in. steel lap welded	44%	30%	53½%	40½%	47%	34%

Malleable fittings: Classes B and C, banded, from New York stock sell at list plus 4%; class A, plus 23%. Cast iron, standard sizes, 34% off.

SEAMLESS STEEL TUBING—Following base discounts are on 20 gauge or .035-in., round, cold-drawn tubing, ¼-in. to 1-in., O.D., weighing 0.17 lb. to 0.36 lb. per ft. Cutting charge per 100 cuts, $1.50 to $1.58:

O.D. Inches	List Price per ft.	Differential Discount	O.D. Inches	List Price per ft.	Differential Discount
¼	$0.09	50%	⅞	$0.16	35%
⅜	.11	45%	1	.18	31%
½	.14	40%			

NOTE—The discounts are to be lowered by the following differentials in the case of regular .10-.20 carbon: 25,000 ft. or over, 83; 15,000 to 25,000 ft., 82; 5,000 to 15,000 ft., 81; 1,000 to 5,000 ft., 80; less than 1,000 ft., 79.

MISCELLANEOUS—Warehouse prices in cents per pound in 100-lb. lots:

	New York	Cleveland	Chicago
Open hearth spring steel (base)	4.50	6.00	4.20
Spring steel (light) (base)	7.00	6.00	6.00
Coppered Bessemer rods (base)	6.53	8.00	6.70
Hoop steel	4.59	3.96@4.46	4.25
Cold rolled strip steel	7.50	8.25	7.40
Floor plates	5.80	5.66	5.60
Cold drawn shafting or screw	4.25	4.10	3.90
Cold drawn flats, squares	4.75	4.60	4.40
Structural shapes (base)	3.44	3.31	3.20
Soft steel bars (base)	3.34	3.21	3.10
Soft steel bar shapes (base)	3.34	3.21	3.10
Soft steel bands (base)	4.09	3.61	3.75
Tank plates (base)	3.44	3.31@3.55	3.20
Bar iron (3.00 at mill)	3.49	3.36	3.25
Tool steel	11.00	....	....
Drill rod (from list)	60%	40@55%	50%

Electric welding wire, New York, 3/32, 8.35c.; ⅛, 7.85c.; 5/32 to ¼, 7.35c. per lb.

METALS

Current Prices in Cents Per Pound

Copper, electrolytic (up to carlots), New York			13.00
Tin, 5-ton lots, New York			44.62½
Lead (up to carlots), St. Louis	6.70	New York	7.75
Zinc (up to carlots), St. Louis	5.85	New York	6.75

	New York	Cleveland	Chicago
Aluminum, 98 to 99% ingots, 1-15 ton lots	27.20	28.00	28.50
Antimony (Chinese), ton spot	9.25	10.50	10.00
Copper sheets, base	19.50	19.75	23.00
Copper wire, base	15.00	17.50	16.25
Copper bars, base	18.75	20.75	19.50
Copper tubing, base	21.75	25.75	23.00
Brass sheets, base	16.25	20.50	18.75
Brass tubing, base	20.50	25.50	20.50
Brass rods, base	14.00	16.50	15.75
Brass wire, base	16.75	20.50	....
Zinc sheets (casks)	10.25	10.75	....
Solder (½ and ½), (case lots)	33.75	30.00	30.00
Babbitt metal (83% tin)	60.00	56.00	48@52
Babbitt metal (35% tin)	28.00	17.50	23@26
Nickel (ingot and shot) f.o.b. refinery	27.00	....	....
Nickel (electrolytic) f.o.b. refinery	30.00	....	35.00
Nickel (F shot) f.o.b. refinery	30.00	....	....

SPECIAL NICKEL AND ALLOYS—Price in cents per lb., f.o.b Huntington, W. Va.:

Rolled nickel sheet (base)	52.00
Hot rolled rods, Grade "A" (base)	50.00
Cold drawn rods, Grade "A" (base)	58.00

Shop Materials and Supplies

METALS—Continued

Manganese nickel hot rolled rods "E"—low manganese (base) 54. 00
Manganese nickel hot rolled rods "D"—high manganese (base) 57. 00

Base price of monel metal in cents per lb., f.o.b. Huntington, W. Va.:

Shot	32. 00	Hot rolled rods (base)	40. 00
Blocks	32. 00	Cold drawn rods (base)	48. 00
Ingots	38. 00	Hot rolled sheets (base)	42. 00

OLD METALS—Dealers' purchasing prices in cents per pound:

	New York	Cleveland	Chicago
Copper, heavy, and crucible	10.00@10. 75	10.00	10. 75
Copper, heavy, and wire	9. 62½@10. 50	9. 50	10. 00
Copper, light, and bottoms	8. 50@ 9. 00	8. 00	9. 00
Lead, heavy	5. 62½@6. 00	5. 00	6. 50
Lead, tea	4. 37½@5. 00	3. 00	5. 50
Brass, heavy, yellow	6. 50		6. 50
Brass, heavy, red	8. 50 @8. 75	8. 50	8. 50
Brass, light	5. 75	4. 50	6. 00
No. 1 yellow brass turnings	6. 50 @6. 75	5. 50	6. 50
Zinc	3. 50 @3. 75	3. 50	3. 50

TIN PLATES—American Charcoal—Bright—Per box.

		New York	Cleveland	Chicago
"AAA" Grade:				
IC,	20x28, 112 sheets	$23. 50	$22. 85	$18. 50
"A" Grade:				
IC,	20x28, 112 sheets	19. 00	18. 00	17. 00
	Coke Plates—Primes, 20x28 in.			
100-lb.,	112 sheets	13. 00	13. 00	14. 50
	Terne Plates—Small lots, 8-lb. Coating			
IC,	14x20	7. 75	6. 55	7. 40

MISCELLANEOUS

	New York	Cleveland	Chicago
Cotton waste, white, per lb.	$0. 14@0. 21	$0. 20	$0. 14
Cotton waste, colored, per lb.	. 09@ .12½	.17	. 10½
Wiping cloths, 13¼x13¼, per lb	11. 25*	36. 00 per M	. 16
Wiping cloths, 13¼x20½, per lb.	....	52. 00 per M	. 16
Sal soda, per 100 lb.	2. 40	2. 25	2. 65
Roll sulphur, per 100 lb.	3. 60	3. 25	3. 50
Linseed oil, per gal., 5 bbl. lots	1. 00	1. 09	. 94
Lard cutting oil, 25% lard, per gal.	. 55	. 50	. 79†
Machine lubricant, medium-bodied (50 gal. wooden bbl.), per gal.	.29	. 35	. 40
Belting—Present discounts from list in fair quantities (½ doz. rolls).			
Leather—List price, 24c. per lin. ft. per inch of width for single ply.			
Medium grade	40–2½%	30–10%	30–10%
Heavy grade	30–5%	30%	20–5–2½%
Rubber transmission:			
First grade	50%	50–10%	40–10%
Second grade	50–10%	60–5%	60–5%
Abrasive materials—In sheets 9x11 in., No. 1 grade, per ream of 480 sheets:			
Flint paper	$5. 40	$5. 84	$6. 48
Emery paper	9. 90	11. 00	8. 80
Emery cloth	31. 12	31. 12	29. 48
Emery disks, 6 in. dia., No. 1 grade, per 100:			
Paper	1. 49	1. 24	1. 40
Cloth	3. 38	2. 67	3 20
Fire clay, per 100 lb. bag		. 65	. 60
Coke, prompt furnace, Connellsville	per net ton		3. 00@3. 25
Coke, prompt foundry, Connellsville	per net ton		4. 50@5. 00
White lead, dry or in oil	100 lb. kegs		New York, 14. 50
Red lead, dry	100 lb. kegs		New York, 14. 50
Red lead, in oil	100 lb. kegs		New York, 16. 00

*White, at washery.
†Chicago quotes on pure lard oil, No. 1 grade.

Comparative Warehouse Prices

New York	Unit	Current Price	Four Weeks Ago	One Year Ago
Soft steel bars	per lb.	$0. 0334	$0. 0349	$0. 0354
Cold finished shafting	per lb.	0. 0425	0. 044	0. 044
Brass rods	per lb	0. 14	0. 145	0. 18
Solder (½ and ½)	per lb.	0. 3375	0. 335	0. 285
Cotton waste	per lb.	.14@. 21	.14@. 21	.10@. 13
Washers, cast iron (½ in.)	per 100 lb.	6. 50	6. 50	6. 50
Emery, disks, cloth, No. 1, 6 in. dia.	per 100	3. 38	3. 38	3. 38
Lard cutting oil	per gal.	0. 55	0. 55	0. 55
Machine oil	per gal.	0. 29	0. 29	0. 297
Belting, leather, medium	off list	40–2½%	40–2½%	30–10%
Machine bolts up to 1x30 in.	off list	50%	50%	30%

SHOP SUPPLIES

Current Discounts from Standard Lists

	New York	Cleveland	Chicago
Machine Bolts:			
All sizes up to 1x30 in.	50%	60–10–5%	55–5%
1½ and 1½x3 in. up to 12 in	15%	60%	50%
With cold punched hex. nuts up to 1 in. diam. (plus std. extra of 10%)	40%	$3. 50 net	
With hot pressed hex. nuts up to 1x30 in. (plus std. extra of 10%)	45%	3. 50 net	$4. 00 off
Button head bolts, with hex. nuts	10%	List net	3. 50
Hex. head and hex. nut bolts	10%		List plus 10%
Lag screws, coach screws	50%		60–5%
Square and hex. head cap screws	75%	75%	75–5%
Carriage bolts, up to 1 in.x30 in.	40%	60%	50–5%
Bolt ends, with hot pressed nuts	50%		55-5%
Tap bolts, hex. head, list plus	35%		
Semi-finished nuts, ⅜ and smaller	70%		
Semi-finished nuts, ½ and larger	65%	70%	80%
Case-hardened nuts	30%		
Washers, cast iron, ½ in., per 100 lb. (net)	$6. 50	$4. 00	$4. 00
Washers, cast iron, ⅝ in., per 100 lb. (net)	5. 50	4. 00	4. 00
Washers, round plate, per 100 lb. Off list	1. 50	4. 50	4. 00
Nuts, hot pressed, sq., per 100 lb. Off list	1. 50	4. 00	3. 50
Nuts, hot pressed, hex., per 100 lb. Off list	1. 50	4. 00	3. 50
Nuts, cold punched, sq., per 100 lb. Off list	1. 50	4. 00	3. 50
Nuts, cold punched, hex., per 100 lb. Off list	1. 50	4. 00	3. 50
Rivets:			
Rivets, ⅞ in. dia. and smaller	50%	60–10%	60%
Rivets, tinned	50%	60–10%	4½c. net
Button heads ⅝-in., ¾-in., 1x2 in. to 5 in., per 100 lb. (net)	$5. 00	$3. 50	$3. 75
Cone heads, ditto (net)	5. 20	3. 60	3. 85
1½ to 2-in. long, all diameters, *EXTRA* per 100 lb.	0. 25		0. 15
⅝ in. diameter *EXTRA*	0. 35		0. 15
½ in. diameter. *EXTRA*	0. 75		0. 50
1 in. long, and shorter *EXTRA*	0. 75		0. 50
Longer than 5 in. *EXTRA*	0. 50		0. 25
Less than 200 lb. *EXTRA*	0. 50		0. 50
Countersunk heads *EXTRA*	0. 45		0. 25

Machine Requirements and Industrial Construction

Machine Tools and Equipment Wanted

Cal., Fortunia — Fortunia Union High School District, F. P. Newell, Clk. — 2 lathes, (South Bend or equal).

Ky., Louisville—Office of United States Engineer, P. O. Box 72—combined planing, matching and molding machine with planing capacity up to 24 in. wide and 8 in. thick, one 32 in. band saw, and one band saw to take saws 2 in. wide.

Ky., Louisville—Office of United States Engineer, P. O. Box 72—bids until July 21, for one jointer, 20 in. knives.

Mass., Boston—School House Dept., T. Glynn, Chn. City Hall—Oliver 5 speed machine lathe $192 (used), or its equivalent in another make.

Mich., Detroit—Commonwealth Stamping Co., 5930 Commonwealth Ave.—press for small metal stampings.

Mich., Detroit—Forged Seamless Tube Co.—cut off machine, 16 in. engine lathe, tube pointers, drill press, shaper, draw benches, and straightening machine.

Mich., Detroit—Knight Screw Products Co., 6510 Epworth Blvd.—automatic screw machine.

N. J., Newark—M. D. Goodman, 185 Bigelow St.—2 lifting machines, 3 electric arc welders, 2 electric hoists.

N. Y., Buffalo—Kalman Steel Co., Mutual Life Bldg.—machinery and equipment for fabricating works.

N. Y., Buffalo—Trico Products Co., 624 Ellicott St.—equipment for melting metals and manufacturing steel products.

O., Columbus—American Bessemer Sales Co., 967 North High St., G. C. Bradford, Mgr.—equipment for auto repair shop, grinder, 18 in. lathe, etc.

O., Marion—Marion Foundry & Machine Co.—one 10 or 15 ton overhead electric crane.

O., Toledo—Standard Steel Tube Co.—two 16 in. swagers (used).

Pa., Ben Avon—Hamilton Motor Co.—machine shop equipment, including lathe, grinder, drill, etc.

Tex., Call—Kirby Lumber Co., Commercial Natl. Bank Bldg., Houston—machinery for hardwood saw mill.

W. Va., Parkersburg—Parkersburg Machine Co.—one 5 ton overhead electric crane.

Wis., Antigo—Antigo Electric Sign Mfg. Co., N. A. Fowler, Mgr. — drill presses, grinders and squaring shears (new or used).

Wis., Burlington—Bd. of Education, N. Karcher, Secy. — woodworking machinery and tools for vocational school.

Wis., Cumberland—Bd. of Education, W. G. Miller, Secy.—woodworking machinery, bench tools, etc., for vocational school.

Wis., Milwaukee—Milwaukee Cabinet & Supply Co., 764 Windlake Ave., T. Dembinski, Purch. Agt.—woodworking machinery, including sander and sticker.

Wis., Racine—The Walker Mfg. Co., W. F. Walker, Pres., (auto accessories) — equipment for producing pressed steel parts, stampings, etc.

N. B., Grand Falls—A. Lecleric—complete equipment for saw and grist mill.

Ont., Alexandria — A. A. Lapointe — special machinery for manufacture of carbureters.

Ont., Essex — O. Rawlins — complete equipment for garage and auto repair shop.

Que., Montreal—Canadian Packing Co., Ltd., 138 Mill St.—equipment for garage and service repair.

Que., St. Johns—A. N. Levout, Richelieu St.—lathe and emery grinder.

Que., St. Hyacinthe—Langlois & Benoit—band saw, cut off saw, etc.

Que., St. Hyacinthe—43 Monder St. — lathe and drill press.

Que., St. Hilaire—Roy & Masse—equipment for garage repair shop.

Que., Valleyfield—O. Clermont, Jacques Cartier St.—sticker, joiner, etc.

Que., Ville St. Pierre—178 St. James St.—complete equipment for saw mill and garage.

Sask., Briercrest—H. Schenk—machinery and equipment for manufacture of stocking machines of special design.

Opportunities for Future Business

Cal., Burbank—Golden State Box Factory, 1200 East 8th St., Los Angeles, plans to build a box factory here. Cost will exceed $40,000.

Cal., Emeryville—Pacific Gas & Electric Co., 445 Sutter St., San Francisco, is having plans prepared for the construction of foundry, machine, electrical and metal shops, laboratory and equipment storage buildings. Estimated cost $823,800. Private plans.

Cal., Richmond—City, A. C. Faris, Clk., is having plans prepared for the construction of a 1 story, 50 x 50 ft. machine shop. Estimated cost $6,500. H. D. Chapman, City Engr.

Cal., San Francisco—L. R. Lurie, 315 Montgomery St., had plans prepared for the construction of a 2 story factory. Estimated cost $50,000. O'Brien Bros., Inc., 315 Montgomery St., Archts. California Magnacrete Shingle Co., Lessee, c/o Architects.

Cal., Stockton—The Western Pacific R.R. Co., Poplar & Sacramento Sts., awarded the contract for the construction of a machine shop. Cost about $39,000. Noted July 3.

Fla., Miami—Airkool Spark Plug Corp., R. B. Harper, Pres., is having plans prepared for the construction of a 2 story, 100 x 145 ft. factory, at N. W. 29th St. and 2nd Ave. Estimated cost $150,000. Kiehnel & Elliott, Archts.

Ill., Chicago—H. Rubloff, 10 S. La Salle St., is having plans prepared and will receive bids about Aug. 15th for the construction of a 11 story garage at 353 N. State St. A. S. Alschuler, 26 E. Jackson Blvd. Archt.

Ill., Chicago—The Nye Tool & Machine Co., 108 North Jefferson St., is having plans prepared, and will receive bids about Aug. 10th, for the construction of a 1 story, factory on Fullerton Ave. Estimated cost $100,000. Mundie & Jensen, 39 S. LaSalle St., Archts.

Ind., Batesville—The Union Furniture Co., awarded the contract for the construction of a 3 story, factory. Estimated cost $60,000. Noted June 19.

Ind., Evansville—The W. P. Hartic Plow Co., plans to build a 1 story 70 x 160 ft. foundry. Estimated cost $40,000. G. Karges, Furniture Bldg., Archt.

Ind., Indianapolis — National Malleable Castings Co., 546 N. Holmes Ave., is having plans prepared for the construction of a 1 story, 93 x 630 ft. foundry. Estimated cost $100,000. Private plans.

Mass., Brighton (Boston P. O.) — The Garford Motor Truck Co., Inc., c/o W. Taylor, 900 Commonwealth Ave., Boston, plans to build a 2 story service and repair building on North Beacon and Market Sts., here. Cost to exceed $150,000. Architect not selected.

Mich., Detroit—The Edmunds & Jones Corp., automobile lamp manufacturers, is building a 3 story addition unit to their plant. Estimated cost $400,000 including machinery and equipment.

N. Y., Blasdell — Kalman Steel Co., Mutual Life Bldg., Buffalo, plans additions to fabricating works and corrugated bar mill here, also to plant at Youngstown, O. Cost to exceed $200,000.

N. Y., Buffalo—Trico Products Co., 624 Ellicott St., is having plans prepared for the construction of a factory for the manufacture of steel products. Estimated cost $8,000.

O., Cleveland—The Cleveland Worm & Gear Co., H. Dingle, Mgr., 1667 East 40th St.—awarded the contract for the construction of a 1 story, 150 x 240 ft. and 50 x 66 ft. factory, at 3249 East 80th St. Estimated cost $150,000.

Okla., Tonkawa—D. Ryan, will receive bids until Aug. 1st., for the construction of a 2 story, 50 x 140 ft. garage, to be erected on Main St. Estimated cost $60,000.

Pa., Corry—U. S. Radiator Co. awarded the contract for the construction of a 1 story, 166 x 175 ft. machine shop. Private plans.

Pa., Phila.—Hess Bright Mfg. Co., Front & Erie Sts., manufacturers of ball bearings, awarded the contract for the construction of a 1 story, 30 x 140 ft. addition to factory. Private plans.

Pa., Pittsburgh — The Williams Gauge Co., 543 4th Ave., is receiving bids for the construction of a 1 story, 60 x 120 ft. machine shop on Pennsylvania Ave. Estimated cost $75,000. Austin Co., Union Trust Bldg., Engrs. Noted July 10.

Tex., Call—Kirby Lumber Co., Commercial Natl. Bank Bldg., Houston, will soon award the contract for the construction of a sawmill here. Private plans. Estimated cost $75,000. Noted May 8.

Wis., Green Bay—Automatic File & Index Co., 10th St. and South Broadway, will build 1 story, 100 x 120 ft. addition to factory by day labor. Estimated cost $60,000. Noted July 10.

Wis., Madison — Wisconsin Pump Mfg. Co., W. M. Harks, Pres., 445 West Gilman St., plans to build a factory for the manufacture of gasoline pumps. Architect not selected. Estimated cost $50,000.

Ont., Peterboro—Canadian General Electric Co., 212 King St., W., Toronto, awarded the contract for the construction of a 4 story, 80 x 200 ft. factory here. Estimated cost $200,000.